CHAPTER 2

Warfighting Concepts, Emerging Capabilities, and Initiatives

In 2004, the United States is responding to a wide range of challenges across the globe, including fighting the long-term global war on terror, rebuilding Iraq into a peaceful, productive member of the world community, and preventing the spread of weapons of mass destruction. In this era, the nation needs forces that are agile, flexible, and adaptable.

These characteristics define the Marine Corps, and they must continue to do so in the future. This chapter deals with the Marine Corps' efforts to modernize and transform so that it remains a vital part of America's arsenal in these dangerous times. The chapter examines in further detail the new expeditionary concepts mentioned in Chapter One, as well as the Marine Corps' emerging capabilities and initiatives that support them.

PART 1

WARFIGHTING CONCEPTS

NAVAL VISION AND TRANSFORMATION

The Navy - Marine Corps Team is engaged in a focused long-term transformation that will allow us to respond to a changing national security environment. This transformation is dedicated to greatly expanding the sovereign options available worldwide to the President across the full spectrum of warfare by exploiting one of our nation's asymmetric advantages – control of the sea. To this end, naval transformation is centered upon Seabasing– the concepts and capabilities that exploit our command of the sea to project, protect, and sustain integrated warfighting capabilities from the maritime domain.

Seabasing is a national capability, and the overarching transformational operating concept for projecting and sustaining naval power and selected joint forces. It assures joint access by leveraging the operational maneuver of sovereign, distributed, and networked forces operating globally from the sea. Seabasing unites our capabilities for projecting offensive power, defensive power, command and control, mobility and sustainment around the world. The inherent mobility, security, and flexibility of naval forces provide an effective counter to emerging military and political limitations on US overseas access. Seabasing reduces joint force operational dependence upon fixed and vulnerable land bases, offering joint force commanders increased freedom of action to deploy, employ, and sustain forces at a time and place of our choosing. Seabasing and the supporting tools we are developing will usher in dramatic new ways of employing naval forces to deter conflict and, when required, to wage war.

TRANSFORMATION AND NAVAL FORCE DEVELOPMENT

The Navy – Marine Corps Team's transformation encompasses and integrates powerful extensions to current joint capabilities, as well as a range of innovative new capabilities. Just as the Department of Defense's transformation strategy is "hinged" upon the Joint Operational Concepts (JOCs), enhanced naval capabilities are based on a family of naval documents that provide the conceptual basis for how the Navy - Marine Corps team will operate as an integrated naval force in a joint and coalition environment, now through 2020. The Navy – Marine Corps Team – with its two distinct Services, core competencies, and cultures – is proud to serve as a model for what can be achieved by different organizations working towards common ends.

Naval Power 21 is the Department of the Navy's vision statement that guides and supports Naval transformation. Fusing the concepts, capabilities, and core competencies expressed in the Navy's Service vision *Sea Power 21*, the Marine Corps' vision *Marine Corps Strategy 21*, and the Marine Corps' capstone concept *Expeditionary Maneuver Warfare*, *Naval Power 21* "charts the way ahead" for the Navy – Marine Corps Team and is "opera-

tionalized" by the Naval Operating Concept for Joint Operations, which is described later.

Naval Power 21 envisions the Navy - Marine Corps Team continuing to control the sea and project power and US influence beyond the sea as part of an overall joint effort. Our forces will use the sovereignty of the sea to operate without restriction, and our forward expeditionary nature will provide persistent warfighting capabilities and sustained American influence wherever we may be called to deploy. *Naval Power 21* looks to enhancing four inherent qualities of US naval forces, namely, decisiveness, sustainability, responsiveness, and agility.

The Navy and Marine Corps have defined their unique contributions to *Naval Power 21* in their respective vision documents *Marine Corps Strategy 21* and *Sea Power 21*. *Marine Corps Strategy 21* focuses upon the Corps' expeditionary, combined-arms character and the drive to enhance our strategic agility, operational reach, and tactical flexibility. These capabilities will allow us to continue providing US regional combatant commanders with tailored, interoperable Marine Air-Ground Task Forces that can respond quickly across the spectrum of crisis and conflict and conduct forcible entry operations when needed.

Marine Corps Strategy 21 embraces *Expeditionary Maneuver Warfare* (EMW) as the capstone concept that provides the basis for organizing, training, and equipping the Marine Corps for current and future operations. In addition, *Marine Corps Strategy 21* also highlights the Corps' integral role in joint and combined warfare. The strategy calls for us to deepen our strategic partnerships with our sister Services and contribute to the development of joint, combined, and interagency capabilities.

For its part, *Sea Power 21* establishes the CNO's vision for how the Navy will organize, integrate, and transform. It details four interdependent and synergistic Naval Capability Pillars (NCPs) that guide the Navy's force development efforts. Condensed titles for broad groups of naval capabilities, *the Sea Strike*, *Sea Shield*, *Sea Base* and *FORCEnet* NCPs, provide a common construct that the Navy and Marine Corps use together to develop the broad array of capabilities required to operationalize our Seabasing concept.

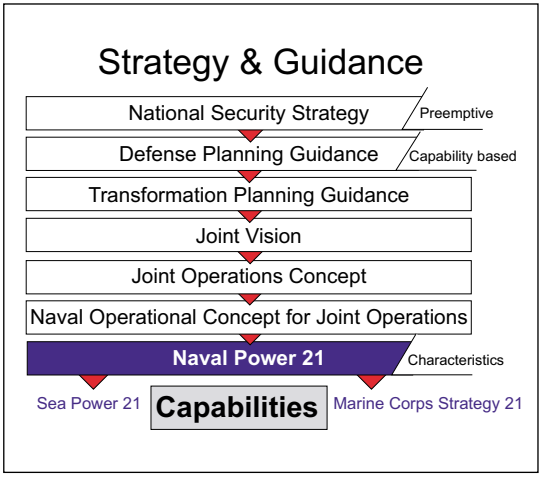
NAVAL OPERATING CONCEPT FOR JOINT OPERATIONS

The *Naval Operating Concept for Joint Operations* (NOC) provides the common overarching guidance for the development of future Navy and Marine Corps capabilities and forces in conjunction with our *Naval Power 21* transformational vision. The NOC describes how the Naval Services will operate across the full range of joint military operations in the near-, mid-, and far-term, and provides a framework for developing new or existing naval capabilities and integrating them into existing and emerging Joint Operating Concepts.

US defense strategy calls for joint forces capable of coordinated joint military operations to assure allies, dissuade adversaries, deter aggression, and decisively defeat any adversary. More specifically, the joint force must be capable of defending the United States, deterring aggression in four critical regions, and swiftly defeating adversaries in two conflicts while retaining the option for decisive victory in one (referred to as the "1-4-2-1" strategy).

To help meet the demands of this strategy, the NOC describes how the Navy – Marine Corps Team will continue to operate as a forward-postured, immediately employable force in the joint and multinational environments. The Naval Services will organize, deploy, employ, and sustain forces to conduct operations exploiting capabilities developed through the interrelated and complementary NCPs of *Sea Strike*, *Sea Shield*, *Sea Base*, and *FORCEnet*, integrated with the tenets of the Marine Corps' *Expeditionary Maneuver Warfare*.

These naval concepts in turn support a range of complementary Joint Operating Concepts. We will maintain freedom of the seas for joint force use and to safeguard maritime trade. Naval forces will conduct time-sensitive and sustained strikes when and where required. Theater air and missile defense capabilities will deny our adversaries the ability to threaten our forces, allies, or friends – over land as well as in the maritime environment. Navy and Marine Corps forces will deter potential adversaries through the ability to preempt or interdict aggressive action.



Naval forces will be mobile, maneuverable, networked, and distributed. Formations such as Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs) and strike or theater ballistic missile surface action groups (SAGs), reinforced with Maritime Prepositioning Groups (MPGs) capable of merging into an Expeditionary Strike Force (ESF), will provide a balanced naval force, operating through a maneuverable sea base, that meets the requirements of our joint force commanders (JFCs). These formations are discussed under the Global Concepts of Operations discussion.

To quickly respond to crises and minimize force closure times, naval forces will continue to be shifted rapidly between theaters. Innovative training and force planning will enable them to sustain a heightened state of readiness to reinforce other forward-deployed naval or joint forces. The physical presence of these naval forces may prevent crises from expanding or mitigate an adversary's ability to deploy and integrate anti-access capabilities. The ability to project power from the sea throughout and beyond the littoral regions – including conducting forcible-entry operations (FEO) – allows the joint force to set initial conditions, preempt hostile action, and decisively defeat an adversary.

Naval forces will minimize the need for host-nation support by providing a sustainable, sovereign sea base that is relatively free from diplomatic and political constraints, thus limiting the impact of area-denial strategies. Moreover, these forward operating forces will have the ability to leverage national assets through a "reach-back" capability. They will be supported by – and support – a persistent, integrated, and tiered joint intelligence, surveillance, and reconnaissance sensor network. Enabled by FORCEnet, they also will have the capability to serve as the nucleus of, and provide an operating base for, a joint task force (JTF) headquarters.

Operating forward provides joint forces with the situational awareness necessary to understand regional security environments and operating cultures while laying the foundations for joint and multinational interoperability. Naval power from the sea can be leveraged through all phases of a joint campaign and in the diplomatic initiatives that may precede it. Forward-deployed forces, complemented by forces rapidly surging from the continental United States or other theaters, provide decision-makers with credible and flexible deterrent options and with an immediately employable combat capability.

With hostilities commenced, JFCs employing naval forces at the operational level can project massed offensive and defensive combat power from the sea at the time and place of their choosing. As required by the campaign plan, naval forces can conduct forcible-entry operations to secure the necessary area and infrastructure, thus enabling additional joint or multinational forces to be introduced. With naval forces, the JFC can compel an adversary to disperse forces to defend against all possible points of entry or to expose forces to counter the threat. The ability of sea-based forces to attack, rapidly withdraw, maneuver, and attack again will force even a numerically superior enemy to react, creating opportunities for joint-force exploitation.

With *FORCEnet*, the sea base will significantly increase the ability of the joint force to command and control, project, support, and sustain forces throughout the area of crisis or conflict. As a crisis expands, the sea base can be scaled in size and capability to meet the needs of the

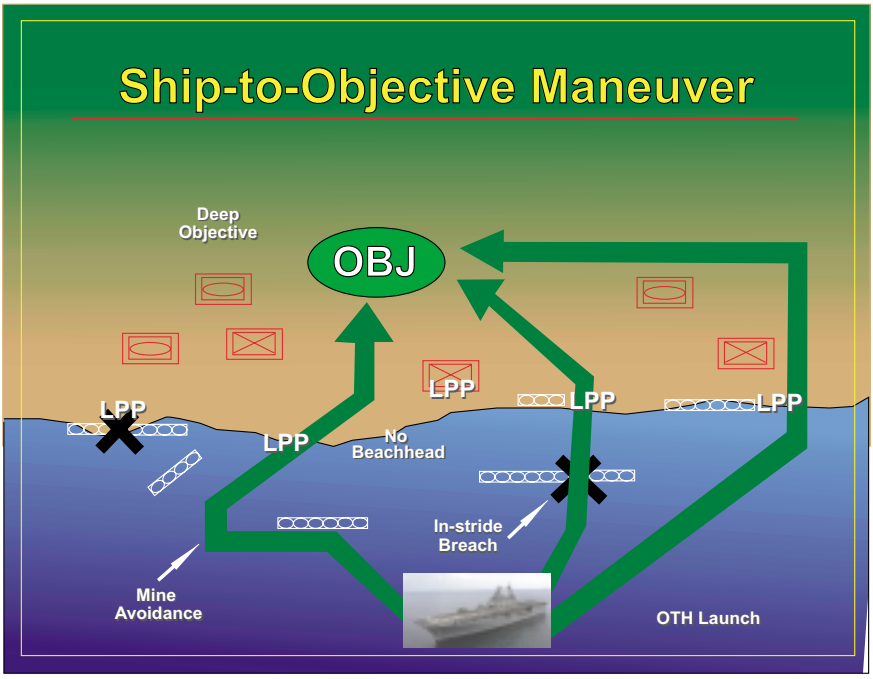
JFC. Follow-on joint forces can augment forward-deployed forces in any region, with rapidly deploying Navy and Marine Corps forces optimally configured for this reinforcing mission.

NAVAL TRANSFORMATION ROADMAP

The *Naval Transformation Roadmap* (NTR), identifies the most significant of the enhanced naval capabilities required to support the NOC, and outlines the steps the Navy and Marine Corps are taking to achieve them. Using the NTR as an overall guide, the Navy and Marine Corps each rely on distinct force development methods that allow us to maximize the value of the core competencies we bring to the joint force. The Navy's Naval Capability Development Process (NCDP) includes extensive participation by Navy and Marine Corps warfighters to identify, validate, and prioritize Navy capabilities required by the joint force, while the Marine Corps' Expeditionary Force Development System (EFDS) produces the capabilities defined in the singular EMW Capability List for integration across the entire Marine Air-Ground Task Force (MAGTF). Far from being merely equal, however, the NCDP and EFDS are mutually supporting, with defined interconnections between the two. The Navy - Marine Corps Team then utilizes a common force development construct, the Naval Capability Pillars, to allow us to identify capabilities of common interest and joint importance.

Sea Shield describes the capabilities that extend precise and persistent naval defensive capabilities not only throughout large maritime areas, but also deep overland to protect joint forces and allies ashore. Sea Shield will assist the joint force in operating effectively despite adversary efforts to deny theater access to US forces. It will achieve these goals by exploiting global sea control to defeat enemy area denial threats including aircraft, missiles, small littoral surface combatants, mines, and submarines. Sea Shield helps assure allies, deter adversaries, and generate operational freedom of action for the projection of naval and joint power.

Sea Strike describes the naval capabilities to project dominant and decisive offensive power from the sea in support of joint objectives. These capabilities include and integrate long-range, precise aircraft and missile fires; large-volume covert strike capability; high-tempo decisive maneuver; Naval Surface Fire Support (NSFS); maritime special operations; and information operations to capitalize on the strategic agility, operational maneuverability, precise weapons employment, battlespace influence capabilities and persistent sustainment of naval forces. By providing full connectivity to, and the core of an early in-theater network backbone for, a powerful grid of national, joint, and sea-based sensors, the immediately employable naval elements of the joint force will be able to



degrade the enemy's ability to effectively command and control and offer an array of capabilities to strike or assault with speed measured in minutes, precision measured in a few meters, and volume of fire measured in many hundreds of fixed or mobile aimpoints struck per day.

Sea Base describes an inherently maneuverable, scalable aggregation of distributed, networked platforms that enable the global power projection of offensive and defensive forces from the sea, and includes the ability to assemble, equip, project, support, and sustain those forces without reliance on land bases within the Joint Operations Area.

Sea Base capabilities allow joint forces to exploit the maneuver space provided by control of the sea. Sea Base capabilities will minimize limitations imposed by reliance on overseas shore-based support, maximize the ability of the joint force to conduct sustained, persistent combat operations from the maritime domain, and enable the transformed joint force to exploit our Nation's asymmetric advantage in the battle space.

FORCEnet will provide the open architecture and building blocks that integrate sensors, networks, decision aids, weapons, warriors, and supporting systems into a highly adaptive, human-centric, comprehensive system that operates from seabed to space and from sea to land. By facilitating comprehensive battlespace awareness, it will support the attainment of dimensional superiority by geographically dispersed forces as they execute a wide variety of missions across the entire range of military operations. It is focused on accelerating the speed and accuracy of information gathering, assessment, decision and action at every level of command. FORCEnet includes assured access to networks and information through secure administration of networks and robust Computer Network Defense in Depth strategies.

EXPEDITIONARY MANEUVER WARFARE FAMILY OF CONCEPTS

With its tenets embedded in *Naval Power 21*, *Marine Corps Strategy 21*, and *Sea Power 21*, *Expeditionary Maneuver Warfare* (EMW) is the capstone concept that guides how the Marine Corps will organize, deploy, employ, and sustain its forces today and in the future. Capitalizing on the Marine Corps' philosophy of maneuver warfare and its expeditionary heritage, EMW emphasizes strategically agile and tactically flexible Marine Air-Ground Task Forces (MAGTF) with the operational reach to project power directly against critical points in the littorals and beyond.

EMW integrates our operational, functional, and enabling concepts, and it describes the relationship between them. EMW prepares the Marine Corps to move beyond traditional "amphibious operations," in the narrow sense, toward "expeditionary warfare" with a broader range of operational capabilities and organizational, deployment, employment, and sustainment methods.

EMW builds upon, rather than amends, the previous conceptual and doctrinal work that the Marine Corps has developed. Consequently, it embraces *Operational Maneuver from the Sea* (OMFTS), *Ship-to-Objective Maneuver* (STOM), *Sustained Operations Ashore* (SOA), *Other Expeditionary Operations* (OEO), as well as the overarching transformational concept of Seabasing and other functional concepts. EMW preserves the MAGTF as the central organizational construct, while providing commander's guidance for improvement in the other integrating concepts of deployment, employment, and sustainment.

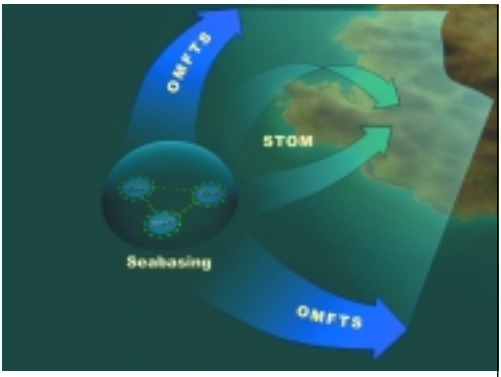
OPERATIONAL MANEUVER FROM THE SEA

Operational Maneuver from the Sea (OMFTS) applies the principles and philosophy of *Expeditionary Maneuver Warfare* to the seaspace. In crafting OMFTS, the Marine Corps codified the many lessons of history regarding how command of the sea can create an operational advantage through a maneuver warfare approach. OMFTS focuses on the littoral region at the operational level of war. Operational maneuver is conducted with a reactive adversary in mind and is designed to place the enemy in a dilemma, at positional disadvantage or vulnerable to surprise.

The ability to strike from the sea at the time and place of our choosing compels the enemy to defend the length of his coast. The capability provided by OMFTS forces the enemy to disperse the force throughout the littoral region and renders him vulnerable to defeat in detail. If the enemy fails to dissipate his combat power to guard against our capability and remains concentrated, then naval forces can maneuver opportunistically through the gaps in his defenses to strike at critical infrastructure and vulnerabilities. OMFTS enables naval forces to redefine the battle space. By attacking from an unexpected or new direction, naval forces can have decisive impact on the enemy scheme of maneuver.

SHIP TO OBJECTIVE MANEUVER

Marine Corps forces have long provided a scalable, tailorable and expeditionary combined-arms option, enabling joint commanders to deal with a wide range of contingencies. For decades, however, Marine power projection has included a deliberate buildup of combat power



ashore. This buildup required the establishment of a force beachhead, with relatively fixed fire support, logistics, and command and control positions located ashore. Only after naval forces fought ashore and established a beachhead would the MAGTF begin to focus its combat power on the joint force's operational objective. A combination of naval initiatives in advanced mobility, fires, and sustainment capabilities, leveraging substantially enhanced information connectivity, will enable future Marine forces to be employed in a dramatically different manner, making them an even more effective tool of national power.

Ship-to-Objective Maneuver (STOM) is a transformational tactical application of enduring naval capabilities for *Operational Maneuver from the Sea* (OMFTS) that exploits each of the enhanced capabilities described by *Expeditionary Maneuver Warfare*. Enabled by persistent, responsive, and dynamic sea bases, forward deployed in international waters, naval forces executing STOM will be able to project Marine Air-Ground Task Forces directly to critical operational objectives located deep inland, dislocating our adversaries both in space and in time. STOM includes combined arms penetration and exploitation operations from over the horizon by both air and surface means, with forces moving rapidly to operational objectives without stopping to seize, defend, and build up beachheads or landing zones. STOM provides the Navy - Marine Corps Team with an enhanced sea-based forcible entry capability, optimized to enable the introduction of follow-on Air Force, Army and multinational forces. In combination with other joint forces, naval forces capable of operational maneuver and STOM can also provide the joint force commander with Operational Maneuver Elements (OMEs), ideal for creating dilemmas for our adversary during sustained operations ashore. Because naval forces able to conduct STOM will be able to project power more swiftly than ever before, they will also be able to "kick down the door" that the enemy's defense presents, and preclude him from effectively integrating his anti-access defenses as crises threaten.

SEABASING

Seabasing is a national capability and the overarching transformational operating concept for projecting and sustaining naval power and selected joint forces, which assures joint access by leveraging the operational maneuver of distributed and networked forces operating globally from the sea. The concept unites our capabilities for projecting offensive power, defensive power, command and control, mobility and sustainment around the world. As detailed in the Navy - Marine Corps Concept *Enhanced Networked Seabasing* (ENS), Seabasing enables and integrates OMFTS and STOM by employing the sea base as a means to support naval fire and maneuver at sea, in the littorals, and beyond. This combination of operational and tactical combined-arms capability, the ability to attack laterally as well as in depth, confronts our adversary with an operational problem he cannot solve.

THE FUTURE SEA BASE

The sea base is a scalable aggregation of distributed and networked platforms that provides for the assembly, equipping, support, and sustainment of offensive and defensive power projection forces from the sea, without reliance on land bases within the Joint Operations Area. The platforms composing the sea base are configured and tailored based on operational requirements and may include elements of an Expeditionary Strike Group (ESG), Carrier Strike Group (CSG), Maritime Pre-positioning Group (MPG), high-speed connectors, or other theater assets. The sea base will exploit the maneuver space provided by the sea to enable and conduct joint operations at a time and place of our choosing. A number of qualitative improvements distinguish the future sea base from our current capabilities. As described in ENS, they include:

INTEGRATED NAVAL POWER PROJECTION

Fully networked, forward-deployed naval forces and platforms will conduct integrated naval power projection. These forces will use the sea as a means of maneuver and enable a broad range of joint campaign operations. Sea-based operations incorporate, integrate, protect, and sustain all aspects of multi-dimensional naval power projection, from space to the ocean floor, from blue water to the littorals and beyond - without dependence on land bases within the joint operations area.

NETWORK-ENABLED C4ISR

Under our Seabasing concept, naval expeditionary command and control (C2) – integrated into the joint C2 architecture – extends throughout the littorals, from seabed to space, and applies to forces operating at sea and from the sea. Command-and control-systems will support naval forces from the point of departure to their objectives and throughout subsequent operations. These C2 systems will facilitate coordinated actions by dispersed forces and assets and enable decision-making at the lowest level to increase operational tempo. The sea-based command-and-control system, in concert with the overarching FORCEnet concept, will also support the functions of a joint task force headquarters.

RAPID FORCE CLOSURE

Another key tenet of Seabasing is that forces will close to the joint operations area by multidimensional means, including self-deployment and strategic air, surface, and commercial assets. Reflecting the forward deployment of sustainable, immediately employable, combat-ready forces, the initial naval response to a crisis will likely consist of the Expeditionary Strike Group (ESG) and Carrier Strike Group (CSG). When ESG and CSGs combine with a Maritime Prepositioning Force Future (MPF (F)) squadron, the Marine Expeditionary Brigade, surface action groups, and the Combat Logistics Force, the resulting sea base will generate synergy among these elements through the integration of their communication, fire-support, and logistics capabilities.

PHASED AT-SEA ARRIVAL AND ASSEMBLY

As the Maritime Prepositioning Squadron (MPSRON) moves to the objective area, the transformational capability resident within MPF (Future) platforms enables phased arrival and assembly. The ability to move directly to the sea base assures the rapid deployment of Marine Expeditionary Brigade-sized forces and selected joint forces in as few as seven days, without the need for host nation facilities within the joint operating area. These forces will arrive at locations enroute to the objective area via strategic lift and self-deployment, then move directly to the sea base using intra-theater assets such as high-speed vessels and tiltrotor aircraft. Supported on their way by networked command and control systems featuring advanced collaborative planning and rehearsal technologies, these forces will arrive in the objective area ready for immediate employment.

SELECTIVE OFFLOAD

Unlike current MPF Squadrons, prepositioning ships of the future sea base will be able to conduct a selective offload of specific equipment and supplies to tailor general-purpose forces for specific missions. Regardless of whether the mission is a logistics-intensive humanitarian operation or a large-scale ship-to-objective maneuver in a major contingency, selective offload will facilitate the employment of an optimized force package.

PERSISTENCE AND SUSTAINMENT

The traditional naval qualities of persistence and sustainment – enhanced by advanced force-wide networks – underpin the staying power and flexibility of the sea base. Naval platforms can stay on-station, where they are needed, for extended periods of time. Regional support bases sustain the sea base via strategic logistics pipelines from the United States and elsewhere. The at-sea maneuverability of the sea base, coupled with advanced underway replenishment technologies and techniques will ensure force readiness over time.

RECONSTITUTION AT SEA

Finally, reconstitution at sea enables the rapid reemployment of a fully capable naval force for subsequent operations. Once recovered at the sea base, onboard logistics capabilities will allow MAGTFs to replace, re-equip, resupply and refurbish personnel and equipment in their constituent units. While being replenished, these forces can simultaneously be task-organized for new missions, and operationally repositioned and redirected toward new objectives in the area of operations. At-sea reconstitution optimizes MAGTF employment as an Operational Maneuver Element by the joint force commander.

Seabasing will provide our nation with unprecedented versatility and flexibility to exploit the freedom of the high seas, relatively unconstrained by political and diplomatic restrictions, for rapid deployment and immediate employment. It will be a key to national success in this new international security environment, and to our ability to meet and defeat our adversaries in the 21st century.

SUSTAINED OPERATIONS ASHORE

When possible and advantageous, MAGTF commanders will exploit sea-based capabilities. When necessary or more efficient they will utilize land-based operations, and consequently MAGTFs must

retain the capability to sustain operations from land bases. Throughout this century, Marine forces have been called upon to operate alongside Army and allied forces in sustained joint campaigns. MAGTF participation in *Sustained Operations Ashore* (SOA) will be every bit as likely in the 21st Century; however, the nature of such participation will be different. SOA envisions the MAGTF remaining a general purpose force, but one capable of executing a series of precise, focused combat actions rather than primarily participating in continuous, methodical ground operations. By capitalizing on its unique sea-based character, the MAGTF not only remains the nation's premier forcible entry force, but establishes itself as the force of choice for decisive operations, as well. Versatility in basing options ensures that Marines will be capable of mounting sustainable operations in "any clime or place."

OTHER EXPEDITIONARY OPERATIONS

Other Expeditionary Operations (OEO) is a draft operational concept that is intended to assist in visualizing how the Marine Corps will conduct Military Operations Other Than War (MOOTW). While the two other operational concepts, *Operational Maneuver from the Sea*, and *Sustained Operations Ashore*, focus on operational maneuver and long-term combined arms combat operations above and on the ground, OEO describes the strategic environment in which MAGTFs will operate, the breadth and increasing complexity of the missions and tasks they will perform, and the capabilities they will require when performing MOOTW.

The basic tenets of *Maneuver Warfare*, the Corps' fundamental approach to warfighting, are as applicable to OEO as they are to the other operational concepts. The emphasis on speed and tempo, the importance of identifying and applying strength against enemy vulnerabilities, and the focus on supporting the commander's intent and main effort in dynamic situations are valid across the range of military operations. OEO stresses the importance of dynamic decision-making under conditions of ambiguity and the need to create and exploit opportunity.

INFORMATION OPERATIONS

Information Operations (IO) at all levels must be carefully planned and fully integrated. MAGTFs must be organized, trained, and equipped to conduct IO in support of a national or theater campaign and in direct support of combat operations. From the Marine Corps' perspective, IO is not a warfighting function in its own right; it is an integrating concept that facilitates the warfighting functions of command and control, fires, maneuver, logistics, intelligence, and force protection. It is not simply another arrow in the MAGTF commander's quiver, but is a broad-based integrative approach that makes the bow stronger. This distinction is key to our belief that IO does not, and will not, replace any of the time-tested warfighting functions—it will enable each of them. Thus, the focus of Marine Corps IO will be upon the information-oriented activities that will best support the tailored application of combat power and the joint force commander's (JFC's) needs. Information operations, whether shaping the battlespace to deter conflict or enabling decisive maneuver, must be recognized as an essential and potentially dominant activity.

GLOBAL CONCEPT OF OPERATIONS

The *Naval Operating Concept for Joint Operations* – and the dispersed nature of the ongoing global war on terrorism – requires maritime force packages able to simultaneously generate combat power around the world and across the entire spectrum of conflict. Like the threat, these forces will be dispersed, yet they will remain fully netted together and seamlessly integrated into joint task forces.

The Navy's former operational organization built around aircraft carrier battle groups, surface action groups, and amphibious ready groups, would not allow the Navy to meet these demands. Hence, the Navy and Marine Corps are reorganizing our forces to form 37 independent strike groups, each able to act as a deterrent to local threats or, if necessary, conduct strikes or raids. The new types of formation include:

>> Carrier Strike Groups (CSGs) centered on large-deck aircraft carriers accompanied by a smaller number of highly capable surface warships

>> Expeditionary Strike Groups (ESGs) that combine amphibious warships and their embarked MEU(SOC)s with surface warships, submarines, and advanced airborne surveillance platforms

>> Strike or missile defense surface action groups (SAGs)

>> Four converted ballistic missile submarines capable of launching large numbers of Tomahawk land-attack missiles

The ESG concept combines the traditional, multi-mission capabilities of the MEU(SOC) and amphibious ready group with enhanced organic air defense, undersea warfare, and strike capability. This will provide ESGs with the ability to operate independently in low- to medium-threat environments, thereby increasing the responsiveness, operational reach, and strategic impact of the Navy and Marine Corps. In many ways, it will be the most adaptable means of response to a range of situations associated with the global war on terrorism.

In the future, ESGs and CSGs will be organized along with Maritime Prepositioning Groups (MPGs) into an Expeditionary Strike Force. MPGs consist of the Combat Logistics Force, Maritime Prepositioning Force (Future) vessels, and a variety of high-speed surface craft, and provide both operational reinforcement and sustained endurance to the ESG, CSG, and theater assets. Together they will form a sovereign sea base, ready to fully exploit the asymmetric advantage that the Navy-Marine Corps Team provides by increasing the offensive and defensive power that can be projected and sustained from the sea.

MARINE CORPS ROLE IN *JOINT VISION 2020* IMPLEMENTATION

The Marine Corps is playing a central role in the implementation of *Joint Vision 2020*, which provides the conceptual template for the transformation of America's armed forces. The Corps' contribution is particularly highlighted in the areas of joint urban warfare and joint non-lethal weapon development.

JOINT URBAN WARRIOR

Joint Urban Warrior (JUW) is a partnership between the US Marine Corps and the US Joint Forces Command (USJFCOM) to progress on joint and combined urban operations concept development and experimentation. It will be a recurring program consisting of an annual Pathway consisting of a major war game and associated workshops, seminars, and planning events. Service, combined, and interagency participation will occur throughout the various JUW Pathways.

JUW is focused on the integration of a full spectrum of advanced operational concepts, organizational innovations, technologies, and other transformational opportunities in complex urban operations. These are necessary to enhance urban operational effectiveness in the context of the "Three Block War" – a term used to describe scenarios in which troops are engaged in a spectrum of humanitarian, peacekeeping and security, and full-scale combat operations, possibly within the space of three city blocks. JUW also recognizes the critical importance of end-state political objectives in shaping the nature of the joint urban campaign and the centrality of stability, support, and peacekeeping aspects of urban operations. Additionally, JUW provides a vehicle for communicating and integrating the activities of the different Services and agencies that are addressing urban operations, concept development and evaluation, a feedback mechanism for the Joint Urban Operations (JUO) Master Plan, and USJFCOM's semi-annual battle rhythm that provides actionable recommendations to the Joint Requirements Oversight Council (JROC).

JUW War Game 04 objectives include:

>> Developing innovative operational and organizational concepts, approaches, and structures for the conduct of major joint operations with particular focus on the dynamics, conditions, and demands necessary to plan and conduct the Three-Block War; the characteristics and demands of stability, support, civil government, and humanitarian relief operations; the influence of the desired political end state on the planning and execution of Three-Block War operations; and the future operational and tactical linkages between the Joint Force Command and the Joint Force components

>> Assessing and refining the Joint Urban Operations Concept

>> Defining operational effectiveness in joint urban operations

>> Identifying issues of particular relevance to US homeland security

JUW builds on the Marine Corps' legacy of urban wargaming and concept development and evaluation that has been fostered mainly by the Marine Corps Warfighting Laboratory (MCWL). This provides both a foundation for continued Service urban development, and an avenue of approach for JFCOM to fulfill the responsibilities as the Department of Defense's executive agent for joint urban operations it assumed in January 2003.

JFCOM, through its Joint Experimentation Directorate's JUO Office, is the Department of Defense focal point for improving joint urban capabilities and is responsible for leading the execution of the JUO Master Plan. While many legacy efforts have been focused on single-Service tactical capabilities, the JUO Master Plan perspective is focused on joint capabilities at the operational level within the "Understand, Shape, Engage, Consolidate, Transition" framework described in *Joint Publication 3-06*.

JOINT NON-LETHAL WEAPONS PROGRAM

The Commandant of the Marine Corps is also DoD's executive agent for the Joint Non-Lethal Weapons Program (JNLWP). To fulfill this tasking, the Commandant established the Joint Non-Lethal Weapons Directorate (JNLWD) under the Deputy Commandant for Plans, Policies and Operations and gave it the day-to-day leadership for the JNLWP. The JNLWP is specifically charged with determining and meeting warfighter needs for non-lethal weapons – via participation in exercises, simulations and war games, formal schools, and mobile training teams – and then leveraging transformational non-lethal technologies into state of the art concepts. The JNLWD shepherds these technologies and potential weapons until they are suitable for acquisition and procurement by the armed services.

Newer directed energy technologies under examination by the JNLWP include the Advanced Tactical Laser (ATL) and the Active Denial System (ADS). Both systems promise transformational capabilities in all types of military operations, and are approved Advanced Concept Technology Demonstration programs that will develop, evaluate, and demonstrate counter-personnel and counter-material non-lethal prototype capabilities. In additional, the JNLWP and the Services maintain a rapid-response reserve of existing non-lethal weapon capabilities to meet urgent needs from the Services or Combatant Commanders. During the past year the JNLWP has supported the Services in responding to urgent requests for non-letahl weapons in Iraq and Afghanistan, and in Kosovo, Romania, Bosnia and in the US European Command.

The JNLWP also engages the Combatant Commanders in programs designed to gauge their specific non-lethal weapon requirements. During FY 2004, the JNLWD will be extensively engaged with both Northern Command (NORTHCOM) and the Joint Forces Command transformational activities. The JFCOM effort includes the Joint Concept Development and Experimentation (JCDE) process, in particular the Joint Urban Warrior 2004 project described above. One of the key aspects of Joint Urban Warrior 2004 will be an examination of the contribution non-lethal weapons can make to the Joint Urban Operations Concept. NORTHCOM activities for US homeland defense will require the integration of DoD NLW capabilities in support of civil authorities regarding anti-terrorism and force protection.

These efforts and those conducted by the other Unified Commands and their Service component commands all seek to identify needs, refine operational requirements and develop desired capabilities. The JNLWP developed a Mission Need Statement (MNS) for a Family of Non-Lethal Capabilities, and the Joint Requirements Oversight Council approved the Mission Need Statement for a Family of Non-Lethal Capabilities, with a joint designator, in December 2002.

Future joint operations will require the integration of lethal and non-lethal capabilities. The JNLWP is committed to developing and supporting non-lethal capabilities for use in the full range of military operations, including homeland security. Current non-lethal weapons and those under development will alleviate current deficiencies, enhance existing capabilities, and provide new capabilities to our joint warfighters in the years and decades to come.

TACTICAL AIR INTEGRATION

The Navy and Marine Corps team's Tactical Aircraft (TacAir) Integration plan will enhance core combat capabilities and result in a more potent, cohesive, and affordable fighting force. This integration is a culmination of a long-term effort to achieve greater combat capability with regard to Naval TacAir and represents a shared commitment to use the resources provided to the Department of the Navy as judiciously as possible.

Integration efforts have been underway for several years. Four of the Marine Corps' fourteen F/A-18 Hornet squadrons have been operating from Navy aircraft carriers as part of their embarked carrier air wings. Last year's Defense Planning Guidance set the bar for TacAir Integration even higher when it directed the Department of the Navy (DoN) to "…conduct a comprehensive review to assess the feasibility of integrating all Naval aviation force structure." Consequently, Navy and Marine Corps combat aviation will be one as never before, will support the greater good of the joint warfighter, and will ensure the future of Marine TacAir.

Key points of the TacAir Integration plan include:

>> It retains our culture and reinforces our expeditionary ethos

>> It provides a smaller, yet more capable and more affordable force

>> It integrates Marine TacAir on all Navy aircraft carriers

>> It integrates Navy TacAir into expeditionary missions in support of the MAGTF to include the Unit Deployment Program

>> It globally sources all Department of the Navy TacAir assets to ensure support to the nation and MAGTF

>> It provides increased combat capability in forward areas

>> It is in concert with the overarching Seabasing concept

A cornerstone of this plan is Department of the Navy funding and maintenance of legacy aircraft at the highest levels of readiness until the Joint Strike Fighter (JSF) and F/A-18E/F replace them. This requires an unwavering commitment to a heightened strike-fighter readiness across the DoN. The readiness levels associated with integration will allow the DoN to surge more aircraft than are within our means today.

To confront the challenges posed by the changing conduct of war and rapid evolution of technology, the Navy and Marine Corps will leverage their respective Service's strengths to integrate when and where appropriate. Integration will produce a more effective and efficient naval force with improved warfighting capabilities. TacAir integration, coupled with new

technology, Service reorganization, and new doctrine, will enable Naval Aviation to provide a unique, flexible, sea-based capability that will provide a greater range of options to the theater and MAGTF commanders. This co-evolution of technology, organizations and concepts that surrounds TacAir integration and the JSF will truly provide a transformational warfighting capability to land- and sea-based naval forces.

Naval Aviation will be fully integrated into task-organized Expeditionary Strike Groups (ESGs) and Carrier Strike Groups (CSGs), enhancing the strategic agility, operational reach, and tactical flexibility of US naval expeditionary forces. Navy and Marine Corps aircraft will operate from sea bases, optimized austere bases ashore, and right-sized expeditionary airfields (EAFs) with a new generation of lethal aircraft, providing naval and joint commanders with capabilities that were hitherto unattainable.

Integrated Naval TacAir, which will also possess significant low-observable strike capabilities embodied in the Joint Strike Fighter, will be capable of delivering fires across the breadth and depth of the joint battlespace. Greatly improved strike options for the MAGTF and theater commanders will be realized by fusing information from naval, joint, and national resources. Battlespace awareness will be measurably improved through the integration of networked forces and assets. Marine Corps and Navy forces will be seamlessly networked with pervasive intelligence, surveillance, and reconnaissance assets – including unmanned and autonomous sensors – allowing them to cover the entire battlespace.

Current Service doctrines and training have traditionally focused on the employment of air at the tactical level (close air support) or the strategic level (long-range strike or interdiction). Now, MAGTF, joint force, or theater commanders can leverage Naval Aviation's distinctive characteristics at the operational level. Organizational and cultural change, coupled with new technology and innovative operating concepts, is fundamentally changing Naval Aviation and achieving exponential increases in its capabilities.

The naval air forces will take advantage of their reach, flexibility, sensors and weapons to project power from both dispersed and networked sea and land bases through air-delivered fires and maneuver. This scalable and continually transforming force will provide the capabilities and flexibility required by US joint force commanders and play a key part in achieving ultimate victory.

PART 2

EMERGING CAPABILITIES

USMC FORCE CONTRIBUTION TO THE SPECIAL OPERATIONS COMMAND

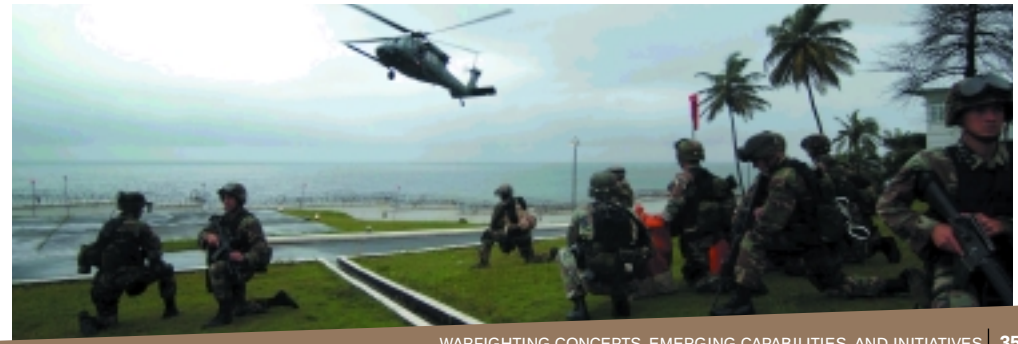
The Marine Corps continues to support and ensure its interoperability with Special Operations Forces through a variety of means. In addition to focused activities to improve interoperability between the Theater Special Operations Commands and the Corps' forward-deployed ESGs/MEU(SOC)s, one of the major initiatives – pursued in coordination with the Naval Special Warfare Command – is the Marine Corps' first sizeable contribution of forces to the US Special Operations Command (USSOCOM).

In coordination with USSOCOM and their "Executive Agent" (the Naval Special Warfare Command) for the force contribution issue, the Marine Corps created an integrated 90-100 man detachment, designated MC SOCOM Detachment One, as an initial "proof of concept" to serve as the foundation for future contributions. The detachment is organized, trained and equipped to conduct special reconnaissance, direct action, coalition support, limited foreign internal defense and other missions as directed in support of Joint and Fleet Commanders.

Formally established in June 2003 at Camp Pendleton, California, MC SOCOM Detachment One includes a Headquarters Section capable of performing battle staff functions supporting the Marine Detachment and the NSW Squadron while facilitating interface with higher headquarters. The remainder of the detachment consists of a reconnaissance element, an intelligence element, and a fire-support element that provide task-organized teams capable of conducting assigned missions.

The Commander, United States Pacific Command (CDRUSPACOM) exercises command over MC SOCOM Detachment One through the Commander, US Marine Corps Forces, Pacific (COMMARFORPAC). The detachment will transfer to the operational control of USSOCOM in order to facilitate joint pre-deployment training, deployment/redeployment and employment operations, and deploy as part of a Naval Special Warfare Squadron in support of designated regional Combatant Commanders.

By leveraging the lessons learned from this history-making effort, the MC SOCOM Detachment One will serve as the foundation for future Marine Corps' force contributions to the United States Special Operations Command.



ANGLICO REACTIVATION AND OPERATIONAL EMPLOYMENT

Air Naval Gunfire Liaison Companies (ANGLICO) are made up of small unit teams that specialize in all aspects of fire support. The teams range in size from terminal-control firepower control teams on up to division fire-support coordination centers, with battalion supporting-arms liaison teams and regimental/brigade fire-support coordination centers in between. ANGLICO units provide MAGTF Commanders a liaison capability and foreign area expertise to plan, coordinate, employ, and conduct terminal control of fires in support of joint, allied, and coalition forces.

In August 2002, the Commandant approved the reestablishment of ANGLICO, authorizing a company on each coast and a separate brigade platoon in Okinawa. In September 2003, 1st ANGLICO was reestablished at Camp Pendleton. 1st ANGLICO will have a company HQ and two brigade platoons. In July 2003, 2d ANGLICO was re-established at Camp Lejeune. 2d ANGLICO will also have a company HQ and two active-duty brigade platoons. Each ANGLICO company will have a habitual relationship with the reserves. Full operational capability for both companies will likely be achieved by late summer 2004.

Meanwhile, 5th ANGLICO (-), a separate brigade platoon, will be established in III MEF in October 2004.

VHX PRESIDENTIAL HELICOPTER REPLACEMENT AIRCRAFT

Marine Helicopter Squadron One (HMX-1) is required to provide safe and timely transportation for the President and Vice President of the United States, foreign heads of state, and others as directed by the White House Military Office. When the President is onboard Marine One, this aircraft is the Commander-in-Chief's primary command-and-control platform and must provide him with the flexibility and capabilities necessary to execute the duties of his office. The global nature of these commitments requires HMX-1 aircraft to deploy worldwide and operate in varying environmental and climatic conditions without mission degradation.

Currently two type, model, and series aircraft are utilized by HMX-1 for the Presidential support mission – the VH-3D and the VH-60N. Numerous modifications and improvements have been incorporated in both aircraft over the past several years to accommodate emerging technologies and additional White House requirements. Although robust platforms that enjoy one of the best safety records in the Fleet, the VH-3D/VH-60N are aging designs with a finite ability to incorporate new technology. Given the dramatically changed nature of the threat environment since Sept. 11, 2001, the need for improved communications and survival capabilities has grown beyond the VH Fleet's structural and performance growth ability.

The VH-3D/VH-60N replacement currently referred to as VHX, will be a conventional helicopter. Its capabilities, which at a minimum will match those of the VH-3D, are split into four functional areas; aircraft operations, communications, survivability, and Presidential accommodations. VHX will have increased capabilities in these areas, while retaining core capabilities carried forward from the VH-3D and VH-60N. The VHX will meet current threat requirements, as well as other yet unseen challenges, to provide the President of the United States with robust and efficient transportation.

EXPEDITIONARY WARSHIPS

Combined with embarked Marines, naval expeditionary warships provide US leaders with forward-presence and flexible crisis response forces. They also provide the most formidable expeditionary forcible-entry capability in the world, the development and maintenance of which is the statutory responsibility of the Marine Corps, as directed by *Title X of the US Code*.

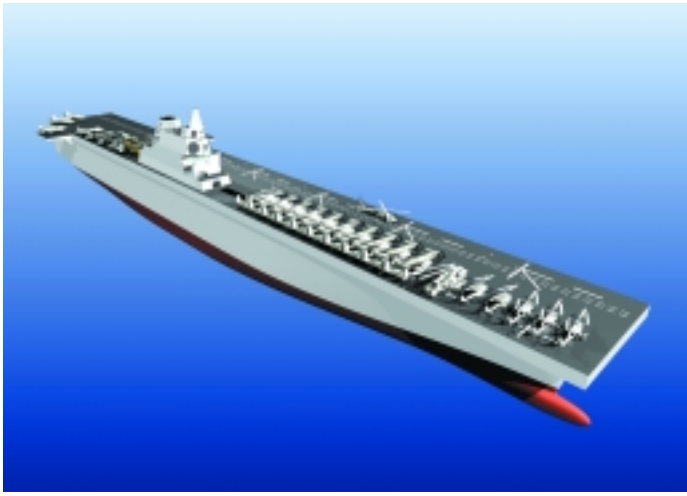
Expeditionary lift requirements are formulated to support the national military strategies, satisfy combat surge demands, and meet day-to-day commitments. The total warfighting amphibious lift requirement for the Marine Corps is 3.0 Marine Expeditionary Brigade Assault Echelons (AE), which currently equates to 14 three-ship Amphibious Ready Groups. This remains a priority requirement. However, fiscal constraints have limited amphibious force structure to a programmatic goal of 12 ARGs capable of lifting 2.5 MEB AEs, while the current active Navy fleet is only capable of lifting 1.93 MEB AEs.

The delivery of the twelfth *San Antonio* (LPD 17)-class landing assault ship during the 2013-2014 timeframe will bring the Navy's amphibious lift capability to 2.48 MEB AEs. Until then, the Amphibious Lift Enhancement Program (ALEP) has been established to mitigate lift shortfalls until this last delivery. Shortfall in active amphibious ships remains an area of concern, and makes the expeditious completion of the 12-ship LPD 17 program even more essential.

Large-deck amphibious assault ships, the centerpieces of ARGs/ESGs and other expeditionary task forces, are likewise essential to maintaining amphibious lift and power-projection capabilities. Currently, there are 12 large-deck ships (seven *Wasp*-class LHDs and five *Tarawa*-class LHAs) in service. Congress directed the construction of an eighth *Wasp*-class multi-purpose amphibious assault ship, (LHD 8) *USS Makin Island*, which is currently under construction and will be delivered in FY 2007. LHD 8 will be similar to LHD 1-7 but will be powered by gas turbine engines and have all-electric auxiliaries. Upon commissioning of the LHD 8, the Navy will retire one of the five *Tarawa*-Class LHAs.

AMPHIBIOUS ASSAULT SHIP REPLACEMENT (LHA(R))

The amphibious fleet is organized for forward presence into twelve ARGs (which in turn become part of Expeditionary Strike Groups), each with three ships. The centerpiece of the ARG is a *Wasp*-class or *Tarawa*-class amphibious assault ship. The five ships of the *Tarawa* class general-purpose amphibious assault ships (LHA) reach the end of their expected service lives at the rate of one per year from 2011 to 2015. LHD 8 will replace one of these LHAs, leaving the LHA(R) program to replace the last four *Tarawa*-class LHAs.



In March 2001, the Navy and Joint Staff approved and validated the LHA(R) Mission Need Statement. The office of the Undersecretary of Defense for Acquisition, Technology, and Logistics authorized Milestone "A" Acquisition status for the program, as well as its entry into the concept exploration phase in July 2001. Under Department of Defense guidance, the Navy conducted an analysis of alternatives (AoA) study to determine the best method of replacing the four remaining LHAs. This study, completed in the summer of 2002, evaluated the following alternatives: (1) a repeat LHD 8 with evolutionary modifications; (2) the LHD Plug Plus (an LHD 8 modified to be 77 feet longer and 10 feet wider), upgraded to enhance its ability to operate the larger and more capable new-generation amphibious systems; and (3) new ship designs spanning a wide range of size and capability.

The Navy and Marine Corps Service leadership determined the LHD Plug Plus to be the most suitable choice based on cost, capability and schedule. The first ship is currently scheduled for an FY 2008 contract award and delivery in the 2013-2014 time frame, with the following ships in the class being acquired every 3 years. This extended procurement and construction schedule will result in the last *Tarawa* class LHA being retired in 2022, seven years past its 35-year expected service life.

SAN ANTONIO (LPD 17)-CLASS AMPHIBIOUS TRANSPORT DOCK SHIP

The operational flexibility and capability of the naval expeditionary fleet will be significantly enhanced with the FY 2005 delivery of USS *San Antonio*, the first of 12 new landing assault ships. LPD 17 is the replacement for four classes of older ships – the LKA, LST, LSD 36, and LPD 4 – and is being built with a 40-year expected service life. When construction is complete, the 12 LPD 17-class ships will enable the Department of the Navy to meet the fiscally constrained programmatic goal of 12 Amphibious Ready Groups (ARGs) capable of lifting 2.5 Marine Expeditionary Brigade (MEB) Assault Echelons (AEs). The LPD 17 class will also eliminate our reliance on the Amphibious Lift Enhancement Plan, a temporary fix meant to fill today's shortfall in active expeditionary lift.

The *San Antonio*-class warships will incorporate advanced characteristics for amphibious warships. Each ship will have 699 enhanced berths for embarked Marines, plus a surge capacity of 101 berths. They also will have a vehicle stowage capacity of 24,600 square feet, a cargo stowage capacity of over 33,000 cubic feet, and a well deck sized for two LCAC or one LCU. Their flight decks will each be capable of supporting operations by two CH-53E Super Stallions, two MV-22 Osprey tiltrotor aircraft, or four CH-46E Sea Knight helicopters. The ships in the class will be outfitted with two Rolling Airframe Missile launchers for self-defense and will incorporate design features that present a significantly reduced radar cross-section compared to previous amphibious ships.

The LPD 17 class represents the Navy's commitment to recapitalization in the form of a modernized expeditionary fleet. As such, the Marine Corps supports the Navy's commitment to expeditiously complete the procurement and construction of this class of ships.

Courtesy Northrop Grumman.

MARITIME PREPOSITIONING FORCE (FUTURE)

The Maritime Prepositioning Force(Future) – MPF(F) – will be the true enabler of primarily sea-based operations. When the MPF(F) becomes operational, the maritime prepositioning role will expand beyond that of today, which is to provide the equipment to prepare a fly-in force for combat. MPF(F) will serve four functions that the current MPF cannot: 1) at-sea arrival and assembly of units; 2) Amphibious Task Force(ATF) interoperability, the capability to reinforce the assault echelon of an ATF; 3) long-term, sea-based sustainment of the landing force; and 4) at-sea reconstitution and redeployment of the force.

The Naval Services are exploring several new technology areas during the development of the MPF(F). These include selective on-load and off-load, internal ship systems (i.e., automated warehousing, item/pallet/container operations, roll-on/roll-off systems, and flow patterns), external ship systems (i.e., ramps, lighterage, and other craft interfaces), modular system/sub-system concepts, and aircraft interface technologies. Unlike current MPF ships, the MPF ships of the future joint sea base will be able to conduct a selective offload of specific equipment and supplies – along with general-purpose forces – for specific missions. Regardless of whether the mission is a logistics-intensive humanitarian operation or complementary support of a large-scale, ship-to-objective maneuver in a major sea based contingency, selective offload will facilitate the employment of an optimal force package.

Currently, the MPF(F) Program is analyzing alternatives to meet approved requirements. We anticipate that results of this Center for Naval Analyses - led study effort will be officially delivered in early 2004.

The combination of MPF(F) and amphibious warships will form the foundation of a ready, capable, and sustainable force able to support itself from the sea base almost indefinitely. MPF(F) promises to revolutionize Marine Corps and joint-force deployment and employment. The Marine Corps supports ongoing studies to refine requirements that realize this capability.

BLOUNT ISLAND PROCUREMENT

The Marine Corps will complete the acquisition of the Blount Island facility in Jacksonville, Florida, in 2004. Upon ownership transfer to the Marine Corps, Blount Island Command becomes responsible for the stewardship of the land, buildings, and environment. To ensure a smooth transition, efforts are in progress to establish facility management processes for base operating support and services, capital improvements, facilities sustainment and restoration, and anti-terrorism force protection.

In addition, an encroachment mitigation plan will be developed to monitor and contain internal and external development threats to Blount Island's long-term mission capability. All proposed land use will be consistent with the Maritime Prepositioning Force mission as amplified in the integrated Blount Island Business Plan and 2004 Master Plan. Joint operations and exercises will be encouraged, and priority consideration will be given to expansion opportunities for military and federal use. On a case-by-case basis, potential short-term leasing may also be considered in conjunction with MPF and federal uses.

Our goal is to continue to sustain MPF operations and also expand the strategic value of Blount Island as it continues to play a vital role in our national defense.

CAPABILITIES OF THE FIFTH ELEMENT

Marine Corps bases and stations are often called the Fifth Element of the MAGTF because of their close link to the operating forces. Marine Corps installations are the foundation of combat readiness where training, the work environment, and quality-of-life services and programs come together. Everything we do aboard our installations directly supports warfighters and the essential elements of our unique Marine culture. Our naval expeditionary character, MAGTF primacy, and our warrior ethos, are all affected by the way we organize and manage our installations.

Marine Corps installations provide a high-quality training environment and are recognized as directly supporting the "Total Force in Readiness." Those installations serve a vital role in training the force, launching and recovering the force, and providing "reach-back" support to our deployed forces. An excellent example of this includes the capabilities within our Regional Contracting Offices that provide MAGTF commanders various goods and services in both the garrison and deployed environment alike.

Marine Corps installations help to instill and maintain Marine Corps values, and provide a range of services to our Marines and their families. In the latter area, installations are using public/private partnerships where feasible to provide quality family housing. We are also making a significant investment to provide quality housing for our bachelors. In addition, our installations host commissaries, exchanges, medical facilities, schools, recreation and fitness centers and all other manner of community services.

Marine Corps installations are located to support maximum integration of MAGTF elements, are grouped around the MEF, and are centered on our major ground bases, training areas and maneuver lands. Additionally, we have located our installations near our airports and seaports of embarkation. Marine Corps Reserve

component activities are located throughout the country, thereby strengthening the link between the Marine Corps and American society.

The ability to train as a MAGTF is a fundamental requirement of Marine Corps readiness – and one of the primary roles of our installations. We must continue to assure unimpeded access to all ranges, airspace and training areas. We maximize training capability on our installations by emphasizing creation of training areas through systematic land-use changes proposed via long-term base master plans, land acquisition and use of real-time scheduling through enhanced information systems.

The roles of our installations are much the same as they have always been, and are commanded by Marines, but we manage our bases very differently today. The Marine Corps has invested in systems and training that support this business focus, yet still recognizes that mission accomplishment may lead us to decisions that are not focused on the bottom line. In non-core competency areas at our US bases, the Marine Corps makes decisions to retain or divest functions based on best business practices.

In recent years our installations have assumed functions previously located in the operating forces that were not core warfighting competencies. Disbursing is a function recently modeled for that effort. The Marine Corps is considering further shifts in the areas of administration, equipment issue, supply, personal effects handling and preservation, packing and packaging. Such shifts improve our operating forces as warfighting commanders and staffs spend less time instructing, maintaining and inspecting non-warfighting functions.

To continue supporting the Marine Corps as it evolves, we have developed a document entitled *Installations 2020* (*I2020*). It provides the vision that will ensure our installations likewise evolve and transition in step with the force. This vision encourages innovation in developing and operating our installations to allow balanced application of resources to best support the combat-ready Marine.

MAGTF EXPEDITIONARY FAMILY OF FIGHTING VEHICLES/ FUTURE COMBAT SYSTEM

The Marine Corps is taking many steps to continue its transformation into the next decade. One example is the MAGTF Expeditionary Family of Fighting Vehicles (MEFFV) program. The timing of this vehicular element of transformation allows the Marine Corps program to leverage science and technology investments by DARPA and the Army in the Future Combat Systems program. This approach is designed to generate Army / Marine Corps synergy, while remaining mindful of the unique requirements of the sea-based expeditionary MAGTF.

The MEFFV will provide the Ground Combat Element commander a family of manned ground-combat vehicles configured to capitalize on the joint capabilities available within the integrated Joint Task Force in the 2015-2020 timeframe and beyond. MEFFV equipped units will provide robust, sea-based, tailorable combined arms forces to the MAGTF and JTF Commander. These combined arms units will be capable of a sustained shaping campaign at the operational level and decisive operations at the tactical level. MEFFV equipped units will be adaptable, operationally mobile, lethal, survivable, and support joint task organization. The equipment, training and operating concepts employed by these MEFFV units will contribute to the five capability enhancements identified in *Expeditionary Maneuver Warfare*, and the enhanced C2 and material interoperability that is a specific goal of the Joint Capabilities Integration and Development System. There will be commonality across both the Army and Marine Corps families of vehicles, while maintaining configurations tailored for the differences in Army and Marine operating environments.

MEFFV fielding is targeted to coincide with end of service times for both the Light Armored Vehicles and M1A1 tanks currently in the Marine Corps inventory. This timing will enable an uninterrupted continuation of the mounted combat capability demonstrated during Operations Enduring Freedom and Iraqi Freedom.

The MEFFV initiative and the family of vehicles it generates will ultimately translate into increased tactical flexibility in the field. Such flexibility is a hallmark of Marine Corps operations and will be critical in future crisis-response and anti-terrorism operations, in addition to our traditional warfighting tasks. The Marine Corps is taking many steps to continue its transformation further.

TRIAD OF GROUND FIRES

With the increased range and speed of the Expeditionary Fighting Vehicle (EFV) and the MV-22, the breadth and depth of the battlefield is increasing immensely. Consequently, the Marine Corps must have weapons systems with correspondingly greater range, lethality, and tactical mobility than those previously available. A triad of indirect fire-support programs is moving the Marine Corps in that direction.

The first element of the triad is the M777E1 Lightweight 155mm towed howitzer that will replace our current M-198 howitzer beginning in 2005. The M777E1 is a joint USMC-Army effort that will meet or exceed all the requirements of the current system, while reducing its weight from 16,000 to 9,800 pounds. The M777E1's maximum range is 15 miles using unassisted projectiles or 18 miles using assisted projectiles.

The second element of the triad is the High Mobility Artillery Rocket System (HIMARS). The HIMARS will deliver high volumes of rocket artillery in support of the ground scheme of maneuver. The HIMARS will provide accurate, responsive general support and general support reinforcing fires at long range, under all weather conditions, and throughout all phases of combat operations ashore. Capable of firing the Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM), the HIMARS will fire both precision and area munitions and is capable of ranges exceeding 36 miles.

The third system of the land-based fire support triad, the Expeditionary Fire Support System (EFSS), will accompany the MAGTF in any expeditionary mode of operations. It will be the primary indirect fires system for the vertical assault element of the ship-to-objective maneuver force. The EFSS will be internally transported by CH-53 or MV-22 aircraft to allow the greatest range and flexibility of employment.

In addition to acquiring these primary fire support systems, the Marine Corps is developing other key adjuncts to the fire support triad that will enhance the capabilities of the fire support platforms. These programs include sensors such as the Ground Weapons Locating Radar (GWLR), the Target Location Designation Handoff System (TLDHS), and the Advanced Eyesafe Rangefinding Optic (AEROS). Additionally, the Improved Position Azimuth Determining System (IPADS) and the Profiler meteorological measuring system will improve location and weather data to ensure first-round accuracy. For the M777E1, the Modular Artillery Charge System (MACS) will reduce the number of propellant types used and Multi-Option Fuze Artillery (MOFA) will reduce the number of fuzes currently in the inventory. Finally, acquisition of M795 155mm high explosive projectiles and variants will increase the lethality and range of our munition inventory.

Ground based, indirect fires are irreplaceable when forces are joined in close combat. Nothing else is as responsive to the commander's needs, or as reliable. They are not weather or facility dependent. As such, they are key components of the reach and lethality of the MAGTF.

MV-22 OSPREY AND VMX-22

The MV-22 Osprey tiltrotor is a revolutionary, vertical/short takeoff and landing (V/STOL), multi-purpose tactical aircraft that will replace the current fleet of Vietnam-era CH-46E and CH-53D aircraft currently in Marine Corps service. The MV-22 will join the EFV and LCAC as an integral part of the Seabasing capabilities necessary to execute *Expeditionary Maneuver Warfare*, and as such procurement of the Osprey remains the Marine Corps' number one aviation acquisition priority. The MV-22's specific missions will include expeditionary assault from land or sea, raid operations, medium cargo lift, tactical recovery of aircraft and personnel (TRAP), fleet logistic support, and special warfare.

The MV-22's 38-foot prop-rotor system and engine/transmission nacelle mounted on each wing tip allow it to operate as a helicopter for takeoff and landing. Once airborne, the nacelles rotate forward 90 degrees, converting the aircraft into a high-speed, high-altitude, fuel-efficient turbo-prop aircraft. The MV-22's design also incorporates the advanced but mature technologies of composite materials, fly-by-wire flight controls, and digital cockpits. The Osprey is capable of carrying 24 combat-equipped Marines or a 10,000-lb. external load. With a 2,100-nautical mile range with single aerial refueling, the aircraft also has a strategic self-deployment capability.

The MV-22 is a multi-mission aircraft designed for use by all the Services. The Marine Corps, Navy, and Air Force are committed to the fielding of this unique aircraft. MV-22 aircraft will be produced in three blocks, as follows:

>> ***Block A*** series aircraft will provide an improved aircraft with which the Marine Corps can train and fight. This includes a software enhancement, nacelle reconfiguration, and additional reliability and maintainability (R&M) improvements.

>> ***Block B*** series aircraft will provide further improvements in effectiveness and suitability for operators and maintainers to include improved access to the nacelle for inspection purposes and substantial R&M improvements.

>> ***Block C*** configuration aircraft will incorporate mission enhancements

Flight-testing of the MV-22 was delayed in the aftermath of the two mishaps in 2000, and resumed in May 2002 to address the aeromechanical issues raised by these accidents. Included in the now on-going testing process is a rigorous, strictly regimented inspection process to verify and validate all of the aircraft's modifications and clearances. The Integrated Test Team (ITT) at NAS Patuxent River, Edwards AFB, and the Bell facility at Amarillo have flown more than 1030 hours since the V-22 returned to flight.

Since the MV-22 is neither a fixed-wing nor rotary-wing platform, it has a unique designation as a tiltrotor. The aeromechanics, composite structure, maintenance concepts, and concept of employment are inherently unique and best addressed in a squadron solely focused on tiltrotor operational test. Marine Tiltrotor Operational Test and Evaluation Squadron Twenty-Two (VMX-22) stood up on August 28, 2003 to meet these requirements. VMX-22, located at MCAS New River, NC, reports to the Commander, Operational Test and Evaluation Force (COMOPTEVFOR), who in turn reports test data and results to the Office of the Secretary of Defense, Director Operational Test and Evaluation (OSD DOT&E).

VMX-22 is an independent test organization under the operational control of COMOPTEVFOR and administrative control of the Deputy Commandant for Aviation with the charter to:

>> Address future requirements

>> Build an operational tactics guide

>> Develop tactics, techniques & procedures

>> Sponsor tiltrotor issues and concepts of employment

>> Prepare the foundation for the training syllabus of the tiltrotor fleet readiness squadron (VMMT)

The squadron provides a solid framework for MV-22 operational testing and lays the groundwork for a long- term "Tiltrotor Center of Excellence."

DISTRIBUTED COMMON GROUND/SURFACE SYSTEM – MARINE CORPS (DCGS-MC)

The Distributed Common Ground/Surface System – Marine Corps (DCGS-MC) – is a subset of the Marine Air Ground Intelligence System (MAGIS) network. MAGIS provides the capability to collect, process, analyze, fuse, and disseminate information derived from all Marine organic intelligence disciplines (imagery intelligence (IMINT), signals intelligence (SIGINT) and human source intelligence (HUMINT)), as well as national and theater systems. DCGS-MC connects intelligence professionals to multi-discipline joint, national and organic data sources, analytic assessments, and collection assets.

The DCGS-MC portion of MAGIS meets the requirements outlined in Under Secretary of Defense for Intelligence (USD(I)) DCGS Draft Capstone Requirements Document (CRD). The DCGS CRD captures the overarching requirements for a collection of systems that will contribute to the joint and combined warfighter needs for intelligence, surveillance and reconnaissance support. This document specifically applies to Service systems that task, process, exploit, and disseminate intelligence in support of joint force commanders.

The current DCGS-MC includes the following elements:

>> The Intelligence Analysis System (IAS), the all-source analysis and fusion hub of MAGIS

>> The Technical Control and Analysis Center (TCAC), the SIGINT correlation, analysis and tasking hub

>> The Tactical Exploitation Group (TEG), the IMINT processing and analysis hub

>> The Joint Surveillance and Target Attack Radar System Common Ground Station (JSTARS-CGS) which receives, displays and tasks Moving Target Indicator (MTI) and JSTARS Synthetic Aperture Radar (SAR) imagery

Expeditionary Maneuver Warfare (EMW) emphasizes the employment of strategically agile and tactically flexible MAGTFs with the operational reach to project relevant and effective power across the depth of the battlespace. MAGIS is specifically designed to support EMW by providing Marine commanders with the all-source, fused intelligence necessary to make informed decisions rapidly across the dynamic, chaotic and complex battlespace. MAGIS is scalable and expeditionary in order to support the different sizes, missions and unique requirements of MAGTFs. It is fully interoperable with joint and national intelligence networks, disseminating tailored intelligence to tactical units.

ENTERPRISE - LAND MOBILE RADIO

The Marine Corps' Enterprise-Land Mobile Radio (E-LMR) network will provide clear, unimpeded, immediate, and interoperable wireless communications for public safety personnel tasked with saving lives and safeguarding property, in accordance with anti-terrorism, force protection (AT/FP), and homeland defense initiatives. Lessons learned from 11 September 2001 have highlighted the requirement for interoperable communications in an Enterprise LMR network that avoids system overload and preserves spectrum availability for Marine Corps installation first responders.

The Marine Corps has a requirement for enhanced AT/FP communications in the supporting establishment within its bases, posts, and stations (BPS). Military Police, installation fire departments, and emergency medical services (collectively referred to as first responders) cannot adequately perform their crucial duties aboard the BPS without reliable, interoperable Land Mobile Radio (LMR) networks. LMR refers generically to commercial hand-held radios and associated network infrastructure that are used extensively by Marine Corps and civilian first responders. Additionally, range control officers, installation game wardens, flight line personnel and numerous other BPS personnel use LMR.

Currently, E-LMR communication architectures and equipment are fielded to some installatioins. As a result, some installation architectures remain fragmented and provide a marginal capability due to the limited radio-frequency coverage, outdated equipment, and limited interoperability with federal, state, and local civil police, fire, and medical agencies.

The goal of this initiative is to enhance Marine Corps AT/FP capabilities and provide interoperable LMR communications. This will facilitate mutual aid operations with local communities. The Marine Corps is committed to the protection of our Marines, families, property, and off-base neighbors. E-LMR will provide Marine Corps first responders interoperable, reliable communications to ensure their critical mission success.

JOINT TACTICAL RADIO SYSTEM

The Joint Tactical Radio System (JTRS) is the Defense Department's transformational radio program. JTRS is a part of the Transformational Communication Architecture (TCA) and the Global Information Grid (GIG). This future architecture is DoD's vision for communications in a net-centric environment. The JTRS supports joint operations by providing the capability to transmit and receive a variety of waveforms and networking protocols used within the radio-frequency spectrum. JTRS ensures joint operational capabilities by providing voice, video, and data services to military commanders at all echelons of the force.

The operational concepts of *Joint Vision 2020*, coupled with the Marine Corps operating concept of *Expeditionary Maneuver Warfare*, place a premium on information superiority as an enabler. To that end, the JTRS will provide the warfighters with vertical and horizontal network connectivity across the radio-frequency spectrum, permitting them to achieve the information dominance that is critical to future warfare requirements.

JTRS is a family of affordable, high-capacity, software-defined tactical radios that provide wireless, mobile, line-of-sight and beyond-line-of-sight C4I capabilities to our warfighters. The JTRS family of radios will be interoperable with legacy communication systems and capable of growth to accommodate new requirements and technologies. Relying on open-system standards, it will also be compliant with the Joint Technical Architecture and will be employed in all domains (i.e. ground mobile, airborne, maritime). Additionally, JTRS will feature a Wideband Networking Waveform that will provide reliable wideband data transmission throughout the MAGTF.

The JTRS capabilities are segmented into form-fit-function domains. JTRS Cluster 1 includes requirements for Marine and Army ground vehicles, Air Force Tactical Air Control Parties, and Army rotary-wing aviation. Cluster 1 JTRS is being developed by the Army. Cluster 2 is a limited AN/PRC-148 handheld radio spiral development effort led by USSOCOM. The Navy is leading the Cluster 3 maritime-fixed terminal development. Cluster 4, led by the Air Force, will provide Air Force and Naval Aviation radios for rotary- and fixed-wing aircraft. The Army is the lead in the newly approved Cluster 5 and is developing dismounted terminals – handheld, man-portable, and small-form fit. Future Cluster objectives will address satellite communications.

JTRS is the wireless "foundation" supporting the GIG architecture, which is essential for network-centric warfighting. JTRS will help bring the Marine Corps' core competencies of readiness, deployability, flexibility, and innovation to joint, interagency, and coalition operations.

NAVY-MARINE CORPS INTRANET

The Navy-Marine Corps Intranet (NMCI) network facilitates the evolution of Marine Corps network-centric operations and garrison e-business operations. Marine Corps participation in the NMCI services contract provides for the delivery of a single, integrated, department-wide shore-based network with comprehensive end-to-end data, video, and voice information services.

NMCI is a partnership between the Department of the Navy, the Department of Defense and industry. This partnership should produce many benefits for the Marine Corps, to include improved hardware and infrastructure support, advances in legacy application reduction and data consolidations, improved cost identification and network security.

Through coordination with the Marine Corps Network Operations and Security Command (MCNOSC), NMCI will augment the Marine Corps Enterprise Network (MCEN) operations capability and help provide secure, accurate and timely exchange of information between deployed and ashore forces. The Marine Corps looks forward to realizing the effectiveness and efficiencies offered by an interoperable department-wide ashore network developed in partnership with innovative industry leaders.

PART 3 INITIATIVES

EXPEDITIONARY STRIKE GROUP EXPERIMENTATION

The Marine Corps is engaged with the Navy in a series of experiments that are exploring the Expeditionary Strike Group (ESG) and Expeditionary Strike Force (ESF) concepts. As noted, the ESG concept will combine the capabilities of surface action groups, submarines, and maritime patrol aircraft with those of Amphibious Ready Groups and Marine Expeditionary Units (Special Operations Capable) [MEU (SOC)s] to provide greater combat capabilities to theater combatant commanders. Expanding on the ESG, the ESF integrates the Carrier Strike Group (CSG), the ESG, and the Seabasing functions provided by the Maritime Prepositioning Force (Future) (MPF(F)) to provide an even more potent capability.

ESG-1, built around the amphibious assault ship *Peleliu* (LHA 5) and the 13th MEU(SOC), deployed from the West coast in August 2003. The foundation of ESG-2, the first expeditionary strike group scheduled to deploy from the East coast in 2004, is USS *Wasp* (LHD 1) and the 22*d* MEU (SOC).

While the basic organization of these two ESGs is the same, each evaluated different command structures. The Peleliu ESG was commanded by a Navy admiral, and experimented with a centralized chain of command under which all Marine and Navy forces assigned to the ESG were under his operational control. Conversely, the *Wasp* ESG/MEU will use the flexible "supported-supporting" traditional command relationship under which amphibious ready groups and MEUs have deployed for years. A Marine brigadier general will command the forces of ESG-3, which will deploy later in 2004.

This experimentation will allow the Naval Services to analyze the impact of the ESG model during the work up, deployment, and employment phases. It will provide critical information to support the future implementation of the concept and highlight any changes that are required in Service doctrine, organization, training, material, leadership education, personnel, and facilities.

NAVAL SURFACE FIRE SUPPORT INITIATIVES

After more than ten years of development and testing, the Navy will soon begin to deliver an extended range, fire support capability for use by the Fleet to support *Expeditionary Maneuver Warfare*. This emerging capability is best described over the near-, mid-, and long-term.

In the near-term the Navy will make TACTOM Block IV Tomahawk missiles available to MAGTF commanders for strikes against high-payoff, time-sensitive targets. Firing from either surface combatants or submarines, the TACTOM can be ready to fire in approximately 10 minutes, which is considerably shorter than the hours needed for today's Block III Tomahawks.

Additionally the Navy Extended Range Munition (ERM) Program anticipates fielding ERM for its 5-inch/62-caliber guns during FY 2008. This munition will permit MAGTF Commanders to engage targets with volumes of fire of GPS-guided precision weapons from surface combatants over-the-horizon.

In the mid-term, DD (X), equipped with two 155-mm Advanced Gun Systems (AGS), 600 round magazine, and land attack missiles will add considerable firepower and flexibility to the Expeditionary Strike Group (ESG) and Expeditionary Strike Force beginning in 2013. The AGS, firing the Long Range Land Attack Projectile (LRLAP), will increase the lethal effects of the MAGTF's Naval Surface Fire Support (NSFS) fires three-fold out to 100 nautical miles. The DD (X) will also be the first naval ship designed to integrate counter-fire detection with its own weapons systems and digitally communicate the information to the Supporting Arms Coordination Center (SACC) for engagement.

Long-term prospects for advancements in NSFS are even more promising. Battlefield commanders will be able to harness the destructive power of directed energy waves or Mach 7+ propelled projec-

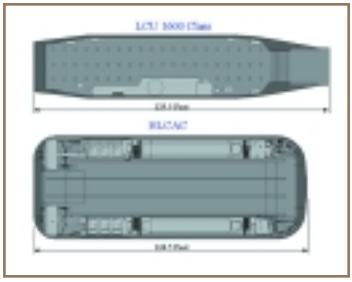
tiles using electromagnetic energy produced aboard the Navy's future family of all-electric ships, which includes DD (X) and CG (X). Electromagnetic guns could hurl a 35-pound projectile at extremely high speeds, which translate into highly destructive results in the target area. In addition, free electron lasers have the potential to provide protection against theater ballistic and cruise missile attacks.

During 2004, work began to formally incorporate NSFS into joint doctrine by fast- tracking NSFS into the Joint Capabilities Integration and Development System (JCIDS) process. With continued commitment, the Marine Corps and the rest of the joint community will once again be able to rely upon NSFS as a readily-available, all-weather fire support system during forcible entry operations.

TACTICAL SURFACE LIFT

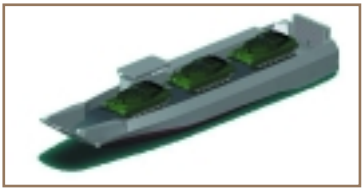
Technological advances in tactical surface lift are moving *Expeditionary Maneuver Warfare* from the realm of concept to reality. In addition to the Marine Corps Expeditionary Fighting Vehicle (EFV), two Navy initiatives are critical in this regard. The first is the Landing Craft Air Cushion (LCAC), a high-speed, fully amphibious craft capable of carrying a 60-ton payload at speeds in excess of 40 knots to a nominal range of 200 nautical miles. The LCAC's ability to ride on a cushion of air allows these craft to operate directly from the well decks of amphibious warships and to access more than 70% of the world's beaches, compared with 17% for conventional landing craft.

A service life extension program (SLEP) began in late 2000 for the 74 active LCACs. This SLEP includes major refurbishment that will extend the lives of these craft to 30 years. LCACs initially go through a system upgrade that includes the replacement of obsolete radios and radar, the installation of the Enhanced Position Location Reporting System (EPLRS), corrosion abatement, and the replacement of the current skirt system with an improved deep skirt. LCAC SLEP provides engine upgrades and refurbishes the hull, thus increasing the LCACs' performance envelopes. Lastly, Phase II provides a "C4N" – Command- Control Communications- Computers-and Navigation



– upgrade that replaces the crafts' deteriorating and obsolete electronic suites.

The Landing Craft Utility Replacement (LCU(R)) is the second effort and will provide an improved heavy-lift landing craft to complement the high-speed, over-the-horizon, ship-to-objective amphibious lift required for EMW and sea-based logistics support. LCU (R) characteristics include an increased payload capacity (up to three M1A1 tanks), the ability to conduct independent operations of up to 10 days, a range of 1,000 nautical miles, increased speed, and a greater cargo-carrying capacity. The craft will have a drive-through capability that will enable vehicles to drive straight onto the craft, therefore reducing loading time.



HIGH-SPEED VESSEL EXPERIMENTATION

High-speed, shallow-draft vessels provide an emerging capability that has the potential to greatly enhance sea-based operations. High-speed vessels (HSVs), or high-speed network connectors, enable the faster, more responsive deployments of force modules to perform a wide range of missions. In particular, HSVs have the potential to fill the requirement for a high-speed connector to link the various nodes of the sea base. Capitalizing on their high-speed (in excess of 40 knots), shallow draft (under 15 feet) and extreme maneuverability, HSVs offer new opportunities to the joint force commander.

In sea-based operations, HSVs will provide a complementary capability that enhances the operational reach and tactical flexibility of other naval platforms, including MPF (F), and amphibious shipping. HSVs will allow the offload of deep-draft ships at sea and deliver personnel and equipment to austere, minor, and degraded ports. HSVs enable the selective offload and rapid tailoring of forces at sea necessary to meet the challenges of the future anti-access environment. The HSV will provide the high-speed connector capability to link the nodes of the Sea Base to each other, to their en route staging bases, and to the MAGTF and joint force operating ashore. HSVs allow the MAGTF commander to rapidly deliver sustainment and maneuver forces over operational distances in littoral operations, and they will play a vital role in the recovery, reconstitution, and re-employment of sea-based forces.

While the focus of experimentation conducted to date has been on supporting sea-based operations and in developing the high-speed connector capability, HSVs have also demonstrated military utility across a spectrum of operations. HSVs may support advance force/reconnaissance, surveillance, targeting, and acquisition insertions and sustained riverine operations, as well as providing a command-and-control platform.

Although the high-speed of these vessels is often highlighted, it is the combination of speed, shallow draft, maneuverability, and interoperability with amphibious and maritime prepositioning ships that

makes them a transformational technology. Key traits of these vessels include:

HIGH SPEED

Current vessels can routinely reach 40 knots while fully loaded. In addition to its high transit speed, HSVs also provide velocity to operations through rapid - onload and offload of equipment, unaided ingress and egress to ports and offload sites, and reconfiguration of the mission deck to perform a variety of missions. This speed increases the operational reach of the joint force commander, allowing him to rapidly reposition forces or deliver sustainment over wide areas of the littoral region. The vessel's high speed also makes it a platform well suited for anti-access and advance force operations.

SHALLOW DRAFT AND MANEUVERABILITY.

The HSV's shallow draft allows for much greater access to the littorals. The maneuverability of these craft allow them to transit restricted and confined channels, and access austere ports, thereby enabling the distribution of personnel, supplies and equipment throughout a much greater range of the littorals. Additionally, the maneuverability provided by the water jet propulsion allows HSVs to operate independent of pilots, tugs, pusher boats, and other port/harbor control craft. The shallow draft also makes these vessels well suited for supporting riverine operations.

C4I SUITE

A state-of-the-art C4I suite allows embarked units to conduct en route mission planning. Combining this capability to continuously plan during movement to the objective area with the ability of the HSV to access a wide range of offload points allows for a tremendous increase in flexibility and operational reach for the joint force commander.

HSVs promise to become a valuable element of the joint sea base. The combination of the HSV with MV-22s, EFVs, LCACs, and LCU(R), provide the MAGTF Commander the means to rapidly maneuver and sustain forces throughout the littorals. The HSVs shallow draft, high speed, maneuverability, and open architecture have the potential to support operations ranging from humanitarian assistance through sustained combat operations.

The Marine Corps has gained deep understanding of the HSV through Military Sealift Comand charter of *MV Westpac Express* for III Marine Expeditionary Force in Okinawa, Japan. This experience, as well as the employment of HSVs in Operation Iraqi Freedom and in major exercises such as Battle Griffin, Millenium Challenge, Victory Strike, and the West Africa Training Cruise, has demonstrated the military utility and tremendous potential of HSVs in a wide range of military operations.

MINE COUNTERMEASURES

A family of Navy and Marine Corps Mine Countermeasures (MCM) systems is being developed and fielded to allow joint sea-based forces to conduct expeditionary operations at a time and place of our choosing, to include terrain defended by anti-access systems such as mines and obstacles. Tactics, techniques, procedures, and material solutions are being developed to support seamless naval expeditionary operations throughout the littoral and beyond.

MINE COUNTERMEASURES: FROM THE STERN GATE THROUGH THE BEACH . . .

Sea-based forces first require an effective mine warfare capability to open and maintain sea lines of communication and to operate within the littoral battle space. The ability to operate in areas defended by enemy mines and obstacles requires a family of capabilities, which includes detection, location, neutralization, marking, and data dissemination. This family of capabilities will allow commanders to detect and avoid mines and obstacles when possible, and breach when necessary.

In conducting *Operational Maneuver from the Sea* the Marine Corps relies upon the Navy to maneuver Expeditionary Forces to the beach in such a manner as to allow deployment and prosecution of operations ashore. Some forces, equipment and supplies will have to cross the beach regardless of our future vertical lift capabilities. In specific areas of national strategic interest, the assault force faces challenges in detection and avoidance of littoral waters and landing beaches fouled by mines and obstacles. In these areas of present and future interest, suitable landing beaches are limited – and our potential adversaries know precisely where they are.

Navy deep-water MCM capabilities reside primarily in a triad of surface mine countermeasure (SMCM) ships, airborne mine countermeasure (AMCM) helicopter squadrons, and underwater mine countermeasure (UMCM) teams consisting of Explosive Ordnance Disposal (EOD) detachments and Marine Mammal Systems (MMS). The MCM triad stands ready to conduct large-area or long-endurance MCM operations from deep water to the vicinity of the 40-foot depth contour.

The Navy is engaged in an effort to augment the triad with MCM systems placed onboard the ships of Carrier and Expeditionary Strike Groups as well as supplementing with MCM modules in Littoral Combat Ships. These are designed to provide a self-contained, "organic" capability to detect, avoid, and/or neutralize mines within an operationally acceptable timeline and with acceptable levels of

operational risk. This next generation of systems includes the Remote Mine hunting System (RMS) and the Long-term Mine Reconnaissance System (LMRS), among others.

The physics of ship draft requirements, sensor and system operating limits, diver physiology, mine characteristics, an extremely dynamic environment, along with the requirement for covert operations and many other factors limit effectiveness of deep water systems for very shallow water (VSW, 40' to about 10'), surf zone (SZ, about 10' to the beach), and beach zone (BZ) operations. In response, the Navy has fielded a specialized family of capabilities to contend with mines and obstacles in these technologically challenging environments. Navy Special Clearance Team-1 (NSCT-1), a 180-man unit composed of Navy SEALS, Navy EOD, Marine Reconnaissance Divers, and support personnel, fulfills an important part of the requirement. NSCT-1 employs unmanned underwater vehicles, marine mammals, and divers to conduct low-visibility mine exploration, reconnaissance, and clearance operations in waters from 600 feet to 10 feet against opposed beaches.

Navy science and technology efforts are also investigating the effectiveness of precision-delivered Joint Direct Attack Munitions (JDAM) against certain SZ/BZ mines and obstacles. Early indications are that this approach may well provide an interim SZ/BZ MCM assault breaching capability as early as FY 2006-2007.

In the far-term (~FY 2012) the Navy science and technology effort is pursuing "smart" bomb- and gun-delivered darts designed to destroy concentrations of SZ/BZ mines. This promising technological approach offers the potential for standoff operations and the removal of men and mammals from the minefield – two key MCM goals.

THROUGH THE BEACH AND BEYOND

Once ashore, Naval expeditionary forces must be capable of detecting, breaching, clearing, proofing, and marking mines and obstacles – and of disseminating mine and obstacle data. From the critical Navy-Marine Corps handoff in the vicinity of the beach to the force objectives and beyond, Marine Corps commanders must be able to detect and avoid ground mines and obstacles when possible, and breach them when necessary.

The Marine Corps' current inventory of MCM systems includes the AN/PSS-12 Mine Detector (a metal detector), explosive breaching systems (Assault Amphibian Vehicle with Mk154 Triple-Shot Line Charge, Mk155 Line Charge, Anti-Personnel Obstacle Breaching System (APOBS)), and mechanical breaching/clearing/proofing systems (M1 Tank with Track Width Mine Plow, Armored D-7 Dozer). In aggregate, these systems provide a limited and aging deliberate breaching capability. They do not meet the detection, speed and responsiveness requirements of the modern battlefield.

Three acquisition programs promise to significantly improve Marine Corps MCM capabilities.

>> ***The Advanced Mine Detector (AMD).*** With an initial operational capability of FY 2008 and full operational capability of FY 2009, AMD will employ ground penetrating radar technology to detect buried anti-personnel and anti-tank mines. This is a key capability in light of the worldwide proliferation of low- and non-metallic mines

>> ***The Coastal Battlefield Reconnaissance and Analysis (COBRA) System.*** COBRA is a remote, multi-spectral minefield sensor that may be flown on manned or unmanned aviation platforms. In development Block 1, COBRA will offer standoff detection of surface minefields and obstacles, and provide beach and inland area intelligence data. In subsequent development blocks, COBRA will be enhanced to detect mines and obstacles in the surf zone, and then inland and buried minefields

>> ***The Assault Breacher Vehicle (ABV).*** With an initial operational capability scheduled for FY 2006 and full operational capability in FY 2007, ABV will be a single-platform minefield breach-

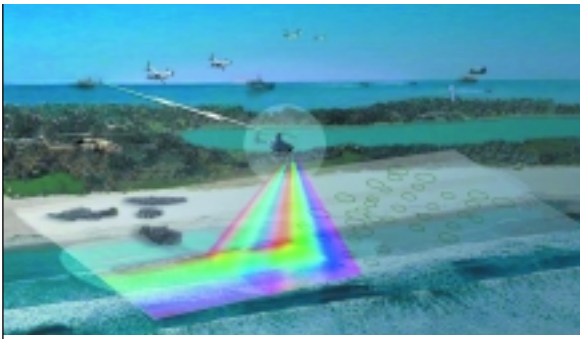
ing/clearing/proofing/marking system that possesses the speed and mobility of modern mechanized forces. Combining two Mk155 Line Charges, a Full-Width Mine Plow, and a breached lane marking system on an M1 tank chassis, the ABV will offer deliberate and "in-stride" breaching capabilities – allowing commanders to maintain initiative and momentum

Marine Corps MCM doctrine, training and equipment are continuously evolving to cover capability gaps, replace obsolete equipment, and meet the challenges posed by newer threats such as improvised explosive devices, off-route mines, and anti-helicopter mines.

Current Marine Corps MCM systems are challenged in providing Force Commanders with the desired "in stride" capability to achieve and maintain initiative and momentum in a full spectrum anti-access environment. The Marine Corps is developing, and in 2004 will implement, its own MCM master plan designed to fill remaining capability gaps and map out the road ahead.

MINE COUNTERMEASURES FOR THE GLOBAL WAR ON TERRORISM

Operations in the global war on terrorism require the fielding of systems designed to remotely detect Improvised



Explosive Devices (IEDs) and mine-initiated ambushes to ensure the mobility of the MAGTF while ashore. Testing on many technologies to locate off-route, semi-buried mines and IEDs is currently underway, in conjunction with the Joint Area Clearance Advanced Concepts Technology Demonstration (JAC/ACTD) office. One such system that shows promise is the Change Detection Work Station (CDWS), which is being rushed into service with OIF-II deploying forces. The CDWS compares baseline image data with real-time battlespace intelligence to detect abnormalities and identify potential ambush sites, along main supply routes and likely maneuver corridors.

CDWS is a key element in the tactics, techniques, procedures, and material solutions that the Marine Corps is developing to ensure unhindered MAGTF mobility throughout the battle area.

INTEGRATED NAVAL LOGISTICS

Emerging operational concepts, technologies, processes and organizations will transform the capability of America's Armed Forces to conduct distributed, multi-dimensional, joint, allied and coalition warfare. It is within this backdrop of unprecedented multi-dimensional joint warfare that the Navy and Marine Corps will integrate naval logistics.

Navy and Marine Corps interdependency in both naval and joint warfighting environments and the continued need to transform naval logistics – particularly with regards to Seabasing operations – require Navy/Marine Corps logistics integration. Therefore, by agreement between their logistics chiefs in July 2003, the Navy and Marine Corps will move beyond logistic interoperability and work closely together to coordinate and resolve specific matters of mutual concern. They are seeking an integration of their Service logistics processes to optimize support to daily operations and future sea-based logistics. Specific areas of mutual interest include: logistic systems and inventory management; logistics policies, procedures and doctrine; and common intermodal naval packaging.

A Naval Logistics Integration Group has been formed to address prioritized Navy and Marine Corps issues related to improving naval logistics, with a focus on supporting sea-based operations. Approved recommendations will be translated into guidance and action by the Services within their existing organizations.

The Marine Corps is moving toward its future vision which requires fundamental changes in the way we provide logistics support to our MAGTFs. Ground and aviation logistics will be part of a broader integrated naval logistics effort, and move from being platform-centered to one that is process-centered and that can seamlessly support joint operations at sea, or on land.

SENSE & RESPOND LOGISTICS

The Marines Corps future vision of highly maneuverable, highly flexible, decentralized operations requires a similar approach to logistics. Future operations, especially STOM operations, require an adaptable, flexible, and responsive logistic system. Sense and Respond Logistics (S&RL) embodies these characteristics. The classic, "mass-based," approach requires the establishment of "mountains" of materiel in relative proximity to the fighting forces. This approach relies heavily on a linear battlefield, secure logistic supply areas, and long build-up times. In this approach, massive amounts of inventory are a hedge against uncertainty. A more recent approach, Just-in-Time Logistics, attempts to hedge uncertainty by predicting and optimizing inventory and delivery. Unfortunately, the non-linear realm of warfare is difficult to model successfully, and when the predictive models fail, the entire system tends to fail. Both approaches provide little or no feedback on resource consumption and supply needs, resulting in misallocation and unnecessary shortages of supplies.

Decentralized forces can no longer concentrate supplies in "iron mountains," but must get them delivered where and when they are needed. S&RL does not hedge uncertainty by mass or prediction, but instead hedges uncertainty through responsiveness, speed, and flexibility enabled by the use of robust information technology and a highly flexible transportation system. With information technology, S&RL senses and recognizes consumption and requirement patterns and quickly responds to these patterns. S&RL leverages the capabilities of networked enabled forces to share logistic information, share a common perspective of the battle space, provide early awareness of consumption and needs, allow commitment tracking, and allow for reconfiguration of the logistic system when needed. Without large inventories, transportation will be flexible and configurable to ensure that the system can adapt to sensed patterns and needs. The best supply chain is no longer one that is highly optimized, but on that is highly adaptive and flexible.

In order to implement S&RL the Navy and Marine Corps cannot merely modify current practices, but must pursue a network enabled approach to operations that greatly improves the integration between operations and logistics. The S&RL Initiative aims to rapidly introduce a prototype, network enabled logistics system into joint experimentation and identify appropriate measures to evaluate potentially transformational logistics concepts. The Marine Corps has incorporated S&RL into the Logistics Capability Development efforts that support the Sea Viking-04 (SV04) exercise this year. The S&RL Initiative will also serve as a baseline for ongoing ForceNet efforts where intelligence, operations, fires, logistics, and other areas must function quickly within a complex Common Operating Picture (COP).

GLOBAL COMBAT SUPPORT SYSTEM-MARINE CORPS (GCSS-MC) AND MARINE CORPS LOGISTICS COMMAND AND CONTROL (LOG C2)

GCSS-MC is the Marine Corps portion of the overarching Global Combat Support System family of systems, as designated by the Joint Requirements Oversight Council (JROC) and the GCSS General Officer Steering Committee (GOSC). It is a JROC approved program for Marine Corps Acquisition and remains a JROC special interest program. The program has the responsibility to acquire and integrate information technology tools that satisfy MAGTF, Combatant Commander and Joint Task Force (CC/JTF) requirements.

The goal of GCSS-MC is to provide modern, deployable IT tools for supported and supporting units. GCSS-MC will be based upon a recently completed Logistics Operational Architecture. This architecture drives the development of tools that will better integrate current supply, logistics, distribution, and financial processes. These tools will include, but are not limited to:

>> A web-based portal that provides a single point of entry to request products and services

>> A logistics command-and control-capability to support MAGTF C2 processes

The key to achieving this goal lies with the establishment of an environment where GCSS-MC data and information may be shared across the Marine Corps enterprise and with other Services and agencies.

The GCSS-MC acquisition strategy follows best business practices by selecting the best deployable commercial-off-the-shelf tools to enable the operational architecture and meet the MAGTF and CC/JTF requirements. Following selection of these commercial tools, the Marine Corps will select an integrator. The initial operational capability, scheduled for 2005, will be a portfolio of deployable commercial-off-the-shelf and government-off-the-shelf

capabilities that mirrors industry standards, supports both peacetime and deployed wartime logistics requirements, and meets MAGTF requirements.

Marine Corps Logistics Command and Control (Log C2) is an important element of GCSS-MC that enables MAGTF commanders with logistics command-and-control (C2) functionality. It supports MAGTF C2 processes and systems, enables current and emerging warfighting concepts and logistics processes, and injects logistics data into the MAGTF Common Operational Picture. Log C2 is designed to be functional within all elements of the MAGTF by providing logistics-unique planning and execution tools.

Currently, MAGTFs conducting the planning or execution of logistics-related tasks must rely on disparate manual processes supported by legacy applications. This creates significant inefficiencies, as well as inconsistencies in the processes and metrics used in logistics planning and execution across our operating forces.

To correct this deficiency, the Marine Corps is developing and fielding the Common Logistics Command and Control System (CLC2S). CLC2S provides the MAGTF with automated logistics planning and execution tools that will complement and be interoperable with current and emerging MAGTF, naval, and joint C2 processes and systems. CLC2S will not be a separate C2 capability, but will be the logistics/combat service support component of the overarching MAGTF C2 capability and provide input to the MAGTF's common operating picture. CLC2S will be resident on Global Combat Support System-Marine Corps and feed both GCSS-MC and GCCS using communications parceling technologies. It is important to note that CLC2S does not require additional infrastructure in the MAGTF. It is a software solution that operates over existing networks and in the future will reside within GCSS-MC.

TRANSFORMATIONAL COMMUNICATION ARCHITECTURE

The Transformational Communications Architecture (TCA) is an overall joint communications concept that aims to provide data connectivity to all echelons of the force. This architecture will deliver more than an order-of-magnitude improvement in connectivity, capacity, interoperability, availability, security, and speed. The TCA provides this through the incorporation of advanced laser and radio frequency technologies, software configurable terminals, packet switching, dynamic bandwidth resource allocation, and network and interface standards. It also implements a new

concept for the management and operation of large integrated and interconnected networks that concurrently and seamlessly connect people and machines with high reliability, survivability, and responsiveness.

The programs that will form the foundation of the TCA are the Joint Tactical Radio System (JTRS), the Transformational Communications System (TCS), Advanced Extremely High Frequency (AEHF) Satellites, and the Mobile User Objective System (MUOS). The new capabilities they provide include ground terminals and satellite constellations that will meet future networked force requirements.

The TCA will provide dynamic, end-to-end accessibility and coverage for global requirements across the civil, federal, and intelligence communities. In addition, the TCA will benefit from an all-Internet Protocol (IP) environment, while providing an integrated network management system, end-to-end information dissemination processes, and security management. Finally, TCA is the end-to-end satellite communication transport segment of the broader information enterprise made up of the DOD Global Information Grid (GIG), other agency fiber backbones, and terrestrial networks.

Once realized, the TCA will enable next-generation space-to-space, space-to-ground, airborne-to-space, selected ground and control systems to provide interoperable, wideband protected, broadcast, and data relay communications. The TCA will also provide operational management systems and the associated interfaces necessary to provide the prescribed communications capability across the GIG and the intelligence community.

TCA provides a robust, dynamic and flexible information enterprise environment to warfighters. Every asset in the battle space is addressable and capable of generating, processing, or routing information. Ground, airborne, sea-borne, and space-based communication components use well-defined, interoperable protocols and interfaces for efficient data exchanges at the tactical level, dynamic information sharing at the operational level, and responsive decision-making and dissemination at the strategic level.

C2 ON-THE-MOVE NETWORK DIGITAL OVER-THE-HORIZON RELAY (CONDOR) CAPABILITY SET

Operation Iraqi Freedom highlighted the need for improved on-the-move and beyond-line-of-sight data capabilities for maneuver units. The C2 on-the-move Network Digital Over-the-Horizon Relay (CoNDOR) Capability Set provides these capabilities throughout the MAGTF. It enables the use of command-and-control applications and Blue Force tracking devices that feed into the Common Operational Picture (COP). Building the COP increases situational awareness of friendly units and disseminates intelligence products on enemy locations, significantly enhancing the information available for the leader's decision cycle.

The CoNDOR Capability Set bridges the gap between today's radio inventory and the future Transformational Communication Architecture (TCA). CoNDOR provides a Joint Tactical Radio System (JTRS)-like capability now, which enables our forces to learn how to operate in a JTRS environment. CoNDOR is an architectural approach, based on open standards, that provides SIPRNET connectivity to the forward edge of the battlefield and which will readily accept JTRS terminals when they are fielded.

The CoNDOR Capability Sets will consist of the following three variants: CoNDOR Gateway, CoNDOR Point-of-Presence Vehicle (POP-V), and CoNDOR Jump Command and Control (C2) Vehicle. The CoNDOR Gateway connects areas limited to line-of-sight communications using the Enhanced Position Location Radio System (EPLRS) and extends their coverage beyond the line of sight. The CoNDOR Point of Presence Vehicle (POP-V) provides units with legacy radios the ability connect to the tactical data network. The CoNDOR Jump Command and Control (C2) Vehicle provides a mobile command post capability with data communications during displacements. This Jump C2 variant provides on-the-move situational awareness by maintaining the network connectivity of C2 applications.

Since the CoNDOR Capability Set provides a tactical networking environment similar to the systems that will form the TCA, this effort begins the Marine Corps transition toward an IP-enabled, fully netted force. The relay has been developed and demonstrated using Office of Naval Research and USMC RDTE funds. It is expected to transition into a formal acquisition program during 2004.

JOINT BLUE FORCE SITUATIONAL AWARENESS

The Marine Corps is actively participating in the multi-Service Joint Blue Force Situational Awareness (JBFSA) Integrated Product Team (IPT) efforts to address interoperability shortfalls that exist between numerous Blue Force (friendly force) tracking systems today, and to define the capabilities required to achieve a joint solution in the future.

The JBFSA IPT is a multi-Service effort to enhance the combat effectiveness of Blue Forces, and integrate the Blue Force Common Operational Environment (COE) into a Common Operational Picture (COP) operating within the Global Information Grid (GIG). It will identify, classify, and characterize the status of joint and coalition forces operating throughout the battlespace, both within and beyond the line of sight. It will operate globally, supporting the full spectrum of operations from major combat operations to peacetime engagement, stability and support operations, and home-station training on a 24-hour per day basis.

Today's Service-specific Blue Force tracking (BFT) systems, although valuable, tend to operate independently with separate types of mission profile support, user devices, information dissemination architectures, and messaging standards. A JBFSA capability implemented among the Services, DoD agencies, and coalition forces would result in a seamless sharing, distribution and display of blue force information, improving overall situational awareness.

Using Operation Enduring Freedom/Operation Iraqi Freedom lessons learned – and tying their efforts to the overall JBFSA effort – the Marine Corps and Army are working to develop a Joint BFT capability that will allow any unit on the battlefield to see, and be seen by nearby units without having to contend with equipment integration issues and constraints. This effort to standardize architectures and software baselines solve much of the interoperability challenges associated with a single ground picture and the dissemination of information needed for situational awareness.

Future conflicts will involve unpredictable enemy actions on an asymmetrical battlefield, which will require greater coordination across all battlefield functions and widespread knowledge of the disposition of all Blue Forces. JBFSA will focus on better identification, retrieval, dissemination, correlation, filtering, fusion, and other processing of Blue Force data created by existing and planned systems. It will improve the ability to transport JBFSA data over existing and planned communications and networking infrastructure to warfighters who need it.

JOINT BATTLE MANAGEMENT COMMAND AND CONTROL (JBMC2)

In January 2003, Joint Forces Command (JFCOM) was given a new mission and mandate by the Office of the Secretary of Defense. The JBMC2 goals result from lessons learned in recent operations where joint interoperability problems have occurred at all echelons. JFCOM, in coordination with the Chairman, Joint Chiefs of Staff, will lead the development of joint doctrine, concepts, requirements, and integrated architectures for JBMC2 interoperability and connectivity.

The Marine Corps works within this forum to improve interoperability of such systems as the Single Integrated Air Picture (SIAP), the Family of Interoperable Operational Pictures (FIOP), Deployable Joint Command–and-Control (DJC2) – and the related capabilities of the Standing Joint Force Headquarters (SJFHQ) and the Joint Command and Control (JC2) follow-on to the GCCS family of systems

JBMC2 consists of the processes, architectures, systems, standards, and command- and-control operational concepts employed by the joint force commander. The joint force commander executes joint operations by employing the entire array of JBMC2 capabilities during the planning, coordinating, directing, controlling, and assessing of joint force operations from interface with the strategic level through the tactical level. The JBMC2 operational concepts and doctrine, systems and underlying joint technical standards will enhance the current efforts underway within the Marine Corps to improve our overall warfighting capabilities.

AVIATION COMBAT ELEMENT (ACE) LEGACY PLATFORM MODERNIZATION

The Marine Corps has several significant aviation modernization programs underway to restore and enhance the capabilities of its existing aircraft and systems. These modernization efforts are vital to the Service's near- to mid-term combat capabilities.

CH-46E

The CH-46E Engine Reliability Program (ERIP) is essential to maintain the CH-46E as a viable and supportable airframe until its full replacement by the MV-22 Osprey. By replacing the T58-GE-16 engine core and accessories, ERIP will arrest the downward trend in engine health, increase engine reliability, and restore operational power margins while providing a significant reduction in fleet labor and support costs. ERIP is currently in full rate initial production. It is vital that this program continue at its programmed pace through FY 2008.

CH-53E

The CH-53E Super Stallion is a three-engine, long-range, heavy-lift helicopter that supports the assault support function of Marine Aviation. The current fleet of aircraft begins to reach the end of its service life during this decade. Beyond replacing the aircraft with new, upgraded platforms, a comprehensive sustainment program is required to effectively meet MAGTF and Joint warfighting requirements over the next fifteen years.

Current sustainment initiatives include a T-64 engine reliability improvement program, Helicopter Night Vision System modification, and engine air particle separator system enhancements. These and other sustainment efforts are designed to address engine Time on Wing difficulty, degradation of wiring, and structural issues to enhance aircrew safety and survivability while lowering operational costs and maintenance man-hours per flight hour.

Operation Iraqi Freedom highlighted Aircraft Survivability issues that are being addressed on an accelerated timeline, to include upgraded missile warning systems, missile countermeasures, small arms protections, and a self-defense weapon.

AH-1 AND UH-1

The AH-1 and UH-1 Upgrade is essential to ensuring the MAGTF possesses credible rotary-wing attack and utility support platforms for the next 20 years. In 1995, the Secretary of the Navy approved the Marine Corps program to upgrade both utility and attack helicopters. This program, known as the H-1 Upgrade, modernizes the entire fleet. It builds on the existing aircraft capabilities, and takes advantage of current upgrade efforts in the areas of communication and navigation, electronic warfare, and night thermal imaging. At the center of the upgrade is the installation of a four-bladed rotor system, a newly developed drive train, and more powerful T700 engines. The addition of an integrated glass cockpit with modern avionics systems will provide a more lethal platform as well as

enhanced joint interoperability through the digital architecture and the installation of DCS 2000 radios.

Overall, the AH-1 and UH-1 upgrade program brings all previously funded or planned modifications under one umbrella, avoiding the cost of a "new start" replacement aircraft. The program uses components that are 84% common between the two aircraft. Through use of the same major components such as drive train, cockpit, and software, logistics support and strategic lift requirements will be greatly reduced, resulting in more space available on amphibious and MPF(F) ships. Moreover, these improvements will make the Marine Corps' attack and utility helicopter capabilities more compatible with the performance demands of all future warfighting concepts.

Operational enhancements include a dramatic increase in range, speed, payload, and lethality of both aircraft while significantly decreasing their logistic footprint. The UH-1Y will operate at nearly twice the current range with more than double the payload. The AH-1Z will realize similar performance increases with the ability to carry twice the current mission payload of precision-guided munitions. Both aircraft will achieve cruise speeds of over 150 knots.

The H-1 upgrade program is an economical and comprehensive upgrade of both UH-1N and AH-1W helicopters that will resolve existing operational safety issues while significantly enhancing the capability and operational effectiveness of the attack and utility helicopter fleet. A key modernization effort, the H-1 upgrade will provide a bridge until the introduction of an advanced rotorcraft design.

AV-8B

The final remanufactured AV-8B Harrier was delivered in September 2003, making the AV-8B one of the youngest aircraft in service averaging eight years old. In addition, the Marine Corps' two-seat TAV-8B trainers are undergoing an upgrade program that adds new color displays, night vision goggle compatible lighting and a more powerful and reliable Pegasus (408) engine. These improvements are increasing the training capability of the AV-8B fleet replacement squadron and increasing the abilities of our replacement pilots reporting to their Fleet squadrons. The enhancements to the Harrier are a critical link for providing continued support to the MAGTF until TacAir Integration implementation and JSF transition are complete.

Further improving the AV-8B's capability is the Open Systems Core Avionics Requirement (OSCAR), which is updating obsolete software and computer equipment. OSCAR allows the AV-8B to maintain its relevancy until the Joint Strike Fighter

enters Marine Corps service by giving the Harrier new capabilities such as the ability to employ JDAM for all-weather strike and CAS capability.

The Litening advanced targeting pod is also providing the AV-8B with a significant improvement in its lethality and survivability. This third-generation forward-looking infrared set, dual field-of-view TV seeker, and infrared marker provides improved target recognition and identification, while the laser designator and laser spot tracker provides precision targeting capability. A few Litening pods have also been equipped with a Pioneer Transmitter allowing real-time video to be sent to ground-based commanders and forward air controllers, thus facilitating time-sensitive targeting and reducing the chance of fratricide and collateral damage.

F/A-18

The F/A-18A Upgrade (Engineering Change Proposal 583) consists primarily of avionics and hardware upgrades that allow the F/A-18A Hornet to process and use updated versions of F/A-18C software and accessories. A large portion of this modification enhances commonality between the "A" and "C" aircraft, reducing logistics footprint, pilot and maintenance training requirements, as well as mitigating obsolescence issues. The modified "A" aircraft is compatible with a Lot XVII F/A-18C aircraft – an aircraft eight years younger. This upgrade also enables the "A" aircraft to employ all current and programmed future weapons.

Seventy-six aircraft are scheduled to receive the upgrade, enabling the upgraded "A" model aircraft to remain in the active inventory until the 2015+ timeframe. These additional, relevant F/A-18 airframes are instrumental in supporting the Navy-Marine Corps TacAir Integration plan.

The F/A-18D Advanced Tactical Airborne Reconnaissance System (ATARS) provides manned airborne tactical reconnaissance capability to the MAGTF. ATARS incorporates multiple sensor capabilities including electro-optical, infrared, and synthetic aperture radar. ATARS-equipped aircraft carry all sensor capabilities simultaneously, enabling imagery that is selectable by the aircrew in flight. Another significant capability of ATARS is its ability to digitally transmit collected data in near real time to ground receiving stations. This imagery can be data-linked to various intelligence systems for national exploitation via the Joint Service Imagery Processing System-Tactical Exploitation Group (JSIPS-TEG).

Eighteen ATARS sensor suites are now operational in all six Marine Corps F/A-18D squadrons. Digital solid-state recording systems and data link capability are still being developed and fielded.

The Litening precision targeting pod incorporates a 3rd generation targeting FLIR along with the additional capabilities of a Laser Spot Tracker, Laser Designator/Rangefinder, Infra-Red Pointer, two charged coupled device (CCD) TV cameras, and onboard video recording capability for improved Battle Damage Assessment. Litening pod capabilities meet or exceed all USMC requirements.

Based upon Litening pod's proven combat value during recent operations, the Marine Corps has initiated an effort to modify its F/A-18D aircraft with an IOC during 2004. The Litening pod is a proven capability, available today, to better enable Marine Aviation to support the MAGTF and Joint Force Commanders.

KC-130

The KC-130 legacy platform modernization and upgrade consists primarily of an Avionics Modernization Program (AMP) for the reserve component, and Aircraft Survivability Equipment (ASE) upgrades for both the active and reserve component inventory. The Marine Corps' KC-130T AMP provides an upgrade for 28 aircraft. The program facilitates solutions to avionics obsolescence issues, upgrades avionics suites to meet mandated communications-navigation and surveillance/air traffic management compliance, electrical systems upgrades, full night vision lighting capability, upgraded defensive electronic countermeasure (DECM) provisions, as well as configuration, support, and training commonality issues within the fleet.

ASE modernization of 12 active duty component aircraft (KC-130F and R series), identified as "core" aircraft, is currently underway. The upgraded DECM suite includes the APR-39V2 upgraded radar

detecting set, the AAR-47, the ALQ-157, and the ALE-39. The APR-39V2 upgrade program is on schedule to be completed by September 2004. Core legacy aircraft are scheduled to remain in the inventory at a decreasing rate until the KC-130J is fully fielded throughout the active component by 2013. ASE upgrade to the reserve KC-130T fleet is scheduled for completion by 2016.

EA-6B

EA-6B upgrades maintain Marine Prowlers as an essential combat-proven part of the MAGTF and the joint force. The cornerstone of the modification, and upgrade plan is the Improved Capabilities III (ICAP III) weapon system for both Marine and Navy EA-6B squadrons. The core of ICAP III is the ALQ-218 digital receiver system. This is the first receiver upgrade to the EA-6B since its fleet introduction over 30 years ago. The improved receivers will enable more precise jamming while also improving aircrew situational awareness and reducing life cycle costs.

ICAP III is scheduled for fleet introduction in FY 2006. As the EA-6B fleet begins to reach the end of its airframe service life, ongoing re-winging and upgrades will also be critical to maintaining the aircraft's viability through 2015.

UNMANNED AERIAL VEHICLES

Unmanned aerial vehicles (UAVs) have grown in importance since the successful deployment of UAV units operating the Pioneer UAV during Operation Iraqi Freedom. The Vertical Unmanned Aerial Vehicle (VUAV) is intended to be a new start program to replace the Pioneer UAV systems. The VUAV will be a transformational UAV, interoperable with the Common Aviation Command and Control System and MAGTF Unit Operations Center.

MARINE AIR COMMAND AND CONTROL SYSTEM

The Marine Air Control Group (MACG) provides the ACE commander with the Marine Air Command and Control System (MACCS) agencies necessary to exercise command and control of aviation assets to support MAGTF, naval, and joint operations. These agencies provide the ability to plan, supervise, and influence the application of the six functions of Marine Aviation.

The MACCS is undergoing a modernization effort to improve and provide expeditionary air command-and-control, sensors, and weapons capabilities during the FY 2005-2008 timeframe. The key thrusts of this modernization effort include expeditionary packaging, modern information technology, and joint interoperability.

The MACCS is also preparing for a convergence of capabilities, organizations, doctrine, training, and personnel to support Expeditionary Maneuver Warfare and the massing of combat effects by dispersed and distributed naval, joint, and coalition assets. Supporting this effort, the Deputy Commandant for Aviation has chartered a MACCS Transformation Task Force to recommend doctrinal and organization changes.

COMMON AVIATION COMMAND AND CONTROL SYSTEM (CAC2S)

The CAC2S is the foundation of MACCS transformation. CAC2S will replace legacy systems within the MACG with modular, scalable, and multifunctional nodal suites. CAC2S will provide MAGTF and joint task force commanders with enhanced information and decision-support capabilities to plan, execute, monitor, and assess joint and multinational operations throughout the spectrum of conflict. CAC2S will provide situational awareness by incorporating intuitive displays, information management functions, embedded training and simulation, self-test and diagnostic capabilities, and command dissemination to the MAGTF C4I Command Information Architecture for real-time combat direction of aviation missions.

MULTI-ROLE-RADAR SYSTEM

The Multi-Role-Radar System (MRRS) is a highly mobile, HMMWV-mounted, multi-role, modular, medium-range air surveillance radar designed to provide an early entry air surveillance capability ashore. MRRS also provides weapon cueing for short-range air defense weapon systems such as the Complementary Low Altitude Weapon System (CLAWS) and the Avenger with its Stinger surface-to-air missiles.

COMPLEMENTARY LOW ALTITUDE WEAPON SYSTEM

The Complementary Low Altitude Weapon System will marry the capability of the Advanced Medium-Range-Air-to-Air Missile (AMRAAM) capability with the mobility of the HMMWV. CLAWS will provide the MAGTF with a rapidly and easily deployed, highly mobile, maneuverable, high firepower, air defense asset that complements existing Stinger-based systems.

THE AIR SURVEILLANCE AND PRECISION APPROACH RADAR CONTROL SYSTEM

The Air Surveillance and Precision Approach Radar Control System (ASPARCS) is the next-generation, HMMWV-mounted, expeditionary air traffic control system for the Marine Corps. It contains three major components: an Air Surveillance Radar (ASR), a Precision Approach Radar (PAR), and an Operations and Communication

Subsystem (OS/CS). This system can support both ATC and air defense missions.

AN/TPS-59 RADAR

The AN/TPS-59 radar provides long-range, three-dimensional, land-based air surveillance for the MAGTF, optimized for theater ballistic missile and conventional air-breathing target detection and tracking. The AN/TPS-59 will undergo a service life extension program to improve expeditionary relevance and to enhance operational readiness. Additionally, a 3-D long-range radar (3DLRR)/Highly Expeditionary Long-Range Air Surveillance Radar (HELRASR) will be developed to replace the AN/TPS-59 radar beginning in FY 2008.

COMPOSITE TRACK NETWORK

Composite Track Network (CTN) is a key enabler for CAC2S and will contribute to the development of a Single Integrated Air Picture. It will enable MACCS radars to interface with the Navy's Cooperative Engagement Capability network and provide cueing information to CLAWS units.

AVIATION GROUND SUPPORT

A dust abatement initiative is under way by the Marine Corps Warfighting Lab to develop materials, tactics, techniques and procedures for rapidly upgrading, repairing, or constructing expeditionary or contingency airfields in-theater while maintaining a low logistics footprint. The Marine Corps requires an organic capability to control dust in expeditionary landing zones for rotary wing operations in arid to semi-arid climates. This need was identified in recent operations in Afghanistan, where dust conditions severely limited pilot visibility. The program will develop general purpose and expeditionary methods of applying dust palliatives and field a system to four Marine Wing Support Squadrons in February.

The M-31 Expeditionary Arresting Gear System is a bi-directional, portable arresting gear system for the tactical recovery of tail hook aircraft at forward operating bases. The system will support all Marine Corps, Navy and most US Air Force and North Atlantic Treaty Organization aircraft. The M-31 System's advantages over the 40-year old M-21 is its mobility and installation time (four hours in normal soil conditions versus a minimum of 24 hours for the M-21).

JOINT STRIKE FIGHTER TRANSITION PLAN

Recently designated the F-35, the Joint Strike Fighter (JSF) will be the next generation strike-fighter for the Marine Corps, Air Force, and Navy. The JSF family of aircraft includes a short take off and vertical landing (STOVL), conventional take off and landing (CTOL) variant, and aircraft carrier-capable (CV) variants. Commonality between the variants helps reduce both the development and life cycle costs and will result in the greatest "bang for the buck" when compared to developing three separate aircraft. The JSF will replace the AV-8B and F/A-18A/C/D in the Marine Corps, the F-16C and the A-10 in the Air Force, and the F/A-18C and F-14A/D in the Navy.

The F-35 will incorporate advanced mission systems, including the Active Electronically Scanned Array radar (AESA), Electro-Optical Targeting System (EOTS), and a Distributed Aperture System (DAS). The AESA, EOTS, and DAS will be fused into a pilot's helmet mounted display system negating the need for a traditional heads up display in the cockpit.

The Marine Corps will operate the STOVL variant that will be capable of operating from large-deck amphibious ships, main operating bases, and austere sites ashore. The STOVL F-35 will provide the Marine Corps with a low-observable, state-of-the-art, high performance, multi-role offensive aircraft. The United Kingdom's Royal Air Force and Royal Navy will also use the STOVL variant.

The Corps will employ the F-35 to execute five of the six functions that Marine Corps aviation performs. This remarkable breadth of employment will allow the Marine Corps to decrease its TacAir inventory, while increasing lethality, survivability, and supportability when compared to legacy aircraft.

The current JSF acquisition strategy for the United States Marine Corps continues to reflect our vision of an "all-STOVL" force. In accordance with a Memorandum of Understanding of August 2002 between Secretary of the Navy, the Commandant of the Marine Corps, and the Chief of Naval Operations, the Marine Corps' strategy will be maintained until a fair and equitable analysis of the CV and STOVL variants can be conducted during flight-testing scheduled for the 2006-2008-time period.

Once the F-35 begins entering service, the USMC will begin retirement of AV-8Bs

and F/A-18 Hornets. All legacy strike TacAir platforms should be retired by 2023. As the TacAir Integration plan progresses, the Marine Corps will explore the feasibility of incorporating an Airborne Electronic Attack capability into the baseline F-35 to address the eventual retirement of EA-6B Prowlers.

The STOVL JSF is absolutely critical to the future success of the Marine Corps, as it will solve the significant problems of age and attrition currently facing Marine TacAir. The combination of stealth, basing flexibility, and superior performance will revolutionize air warfare and Naval Aviation in the 21st century.

OPERATIONAL SUPPORT AIRLIFT

The Marine Corps presently operates four different aircraft to fill its Operational Support Airlift (OSA) requirements: the UC-12 King Air, the UC-35 Citation, the C-9B Skytrain, and the C-20G Gulfstream IV. OSA aircraft provide air logistic support to our warfighters by delivering high priority passengers and cargo between and within theaters of operation. OSA aircraft carry out short-notice, time-critical, logistical air movements, relieving front-line tactical squadrons from having to perform this necessary but non-tactical mission. By freeing our tactical aircraft assets from routine missions, OSA aircraft are an effective combat multiplier for the MAGTF, joint force, and regional combatant commander.

OSA has made significant operational contributions during the last several years. During Operation Enduring Freedom, the USMC C-20G based at MCAS Kaneohe Bay was forward deployed to Bahrain in support of Marine Forces Pacific (MARFORPAC) and the warfighters in theater. More recently, Marine Corps OSA assets from MCAS Miramar were deployed to Kuwait in support of I MEF during Operation Iraqi Freedom, where they delivered key combat personnel and over 70,000 pounds of critical cargo in support of the Marine forces.

In the continental United States, OSA is used to conduct regularly scheduled parts and personnel movements for Combined Arms Exercises (CAX) and other peacetime training exercises. Here again, this eliminates the need for squadrons participating in the exercises of having to conduct their own parts supply flights and allows tactical assets to be used for maximum training benefit.

Acquisition of relatively low cost, commercial-off-the-shelf aircraft with minimal militarization provides MAGTF commanders swift, on-demand support. Current initiatives will ensure the availability of short-notice, time-critical, logistical air support using more capable aircraft fully integrated into Marine Corps operations.

TRAINING TRANSFORMATION

Training Transformation will allow the United States military to function in a multinational coalition setting, while also allowing the Department of Defense to operate with other federal government agencies as well as state and local governments. It will focus on continuously improving defense readiness by providing dynamic, capabilities-based training in support of national security requirements across the full spectrum of service, joint, interagency, intergovernmental, and multinational operations.

Training Transformation consists of three major capabilities:

Joint Knowledge Development and Distribution Capability (JKDDC). This capability drives the transformation of our military forces by creating, imparting, and applying knowledge in new and different ways to individuals and small groups. It will distribute knowledge using a dynamic global knowledge network that provides immediate access to the precise education, training, mission planning or rehearsal resources.

Joint Assessment and Enabling Capability (JAEC). This capability assists senior decision makers in effectively assessing the results of transformational initiatives by systematically collecting and analyzing performance measures at multiple levels through the JKDDC and the Joint National Training Capability, linking to Defense readiness reporting, and providing annual Training Transformation Assessment Reports.

Joint National Training Capability (JNTC). The JNTC is a collection of interoperable national training sites, nodes, and events predicated upon both Combatant Commander and Service training requirements and embedded in an appropriate "joint context." US Joint Forces Command certifies and accredits JNTC sites and events that fully incorporate the key training transformational concepts of realistic combat training, an adaptive and credible opposing force, common ground truth and high quality feedback. The JNTC underpins a global, information age joint national training capability that advances Defense Department transformation efforts to include enabling Multinational, interagency, and intergovernmental network-centric operations.

Comprehensive and realistic combat training contributes more to US combat effectiveness than any single new system. As such, it is a key enabler for transformation. The Marine Corps will play an integral role with other Defense Department agencies to develop and implement transformational training concepts and infrastructure and thus continue to prepare US forces to conduct joint, effects-based operations now and in the future.

NAVAL EXPEDITIONARY FORCE TRAINING AT EGLIN AFB, FL

With the closure of the Vieques training area, the Marine Corps has been actively engaged in developing alternative training areas for naval expeditionary forces on the US East Coast. Eglin Air Force Base in Florida provides a near-term pre-deployment training capability for East coast Expeditionary Strike Groups (ESG)/Marine Expeditionary Units (Special Operations Capable), and has the potential to be a long-term solution. The training concept envisions up to two ten-day periods per year for ESG/MEU training.

The first training exercise at Eglin was an ESG/MEU Exercise conducted from 8-17 December 2003. This exercise was led by elements of the 22d MEU (SOC), and incorporated unit-level live fire and maneuver training, tested the Marine Corps offload plan, and included integrated operations with the US Air Force Special Operations Command.

Eglin AFB's size, proximity to the sea, and layout provide the "battle space" for current and emerging capabilities. Eglin currently has the range space to execute company-level live fire and maneuver training and combined-arms live fire, albeit without live sea-to-land naval surface fire support. While Eglin has the potential for enhanced live-fire and maneuver training, this capability will require a significant investment to upgrade and develop existing facilities. Our near-term focus has been the successful conduct of the December 2003 ESG/MEU exercise.

MISSION-CAPABLE TRAINING RANGES

Marine Corps combat readiness depends on the continued availability of ranges and training areas that provide realistic, mission-oriented training. The Marine Corps Master Plan of October 1997 highlights the importance of ranges and trainings areas, as well as the need to properly develop and manage these key resources. The Marine Corps vision for installation and range transformation is contained in *Marine Corps Installations 2020* (*I-2020*, April 2001).

A range specific master plan is in the early stages of development and, in support of that effort, The Marine Corps Training and Education Command (TECOM) recently initiated an assessment of Marine Corps-wide range requirements. The initial product of this effort, a Marine Corps Range Capabilities Document (RCD), will provide a set of unconstrained range requirements for accomplishing urgent and anticipated future training.

The RCD should be completed in the second quarter of FY-2004. In anticipation of its release, TECOM has established six cornerstone objectives for transforming ranges and trainings areas, including:

>> Preserve and enhance the live-fire combined-arms training capabilities of Marine Corps Air Ground Combat Center / Marine Air Ground Task Force Training Command, 29 Palms and Marine Corps Air Station, Yuma Range Complex

>> Recapture the MAGTF and unit-training capabilities of the Nation's two premier littoral training areas, Camp Lejeune and Camp Pendleton

>> Leverage technology to support every level of training with a goal of providing timely and objective feedback to the training audience

>> Honor our commitments to protecting the environment while preserving and enhancing our ability to conduct live-fire and maneuver training

>> Ensure that our training complexes are available to, and capable of supporting Joint Forces

>> Support the emerging Joint National Training Capability with the common range infrastructure and systems architecture to ensure effective Joint Training

Overall, the training and education continuum and the programs supporting it have the resources necessary to accomplish their mission. Regardless, there are areas of significant concern. There is an increasingly recognized need to make additional investments in range instrumentation, targets, and simulation technologies to upgrade and modernize our training. Current range complex configurations are not optimal for today's training requirements and our ranges may not be adequate for anticipated weapon systems. Of even greater concern, they do not provide sufficient unconstrained maneuver space for MAGTF training. All of our current range planning initiatives are aimed at addressing these concerns to assure our ability to meet future training requirements. The specific issues on which we are concentrating include:

>> A MEB-level fire and maneuver training area

- A MAGTF (MEB-level) Military Operations in Urban Terrain (MOUNT) facility
- Improve instrumentation and feedback systems, and targets
- Mitigations of encroachment on maneuver space at our premier littoral training bases-Camp Lejeune and Camp Pendleton

The Marine Corps has made considerable progress in the past two years on the cataloging, assessing, managing, and funding of its critical range and training area complexes. The assessments of our complexes for their capabilities, capacities, limitations, and encroachments are well underway. Progress has been made in assessing and quantifying the impacts of encroachment and incorporating those assessments into a comprehensive range management system. We have made small, but important, investments to initiate better range maintenance and modernization programs, and the level of support for the next program cycle will be significant. Finally, we remain aware of our dual responsibilities of providing stewardship for these precious resources and providing well-trained Marines that are ready when America calls.

MARINE CORPS ENTERPRISE INFORMATION TECHNOLOGY SERVICES (MCEITS)

Since its inception, the Marine Corps Chief Information Officer (CIO) has been coordinating with representatives from the Department of Defense, the Department of the Navy, and throughout the Marine Corps to establish an information technology infrastructure that better integrates work processes and information flows with technology to achieve our mission and strategic goals. To achieve this vision, the Marine Corps CIO began the Marine Corps Enterprise IT Services (MCEITS) initiative. MCEITS is designed to align our IT resources (manpower, skill sets, hardware, software, facilities, programs, and budget) to create a shared IT services and information environment for all Marines, and establish a reliable, secure, efficient, and responsive IT infrastructure that provides enhanced information access and information management.

Organizations and applications require a common set of IT services. Rather than duplicating these same services for each organization and application, MCEITS will provide a standard set of shared IT services for all users. These include transport services, application and web server hosting, security, test, and certification services, discovery, collaboration, and access to shared data. MCEITS will complement the Navy-Marine Corps Intranet (NMCI) network by hosting legacy applications and databases at regionalized IT centers, accessible through a single enterprise portal by Marines using NMCI hardware and services.

A new IT environment is under development to eliminate duplication of effort, and streamline the deployment of IT tools to our operating forces and supporting establishment. Through more efficient use of our resources, MCEITS will leverage IT to improve the speed and quality of decision-making. By incorporating portal web-based technology, developing a shared data environment, and establishing an IT data center (both garrison and deployed), MCEITS will support the rapid posting data to shared spaces. It will provide users with the improved capability to pull whatever data they need – whenever and wherever they need it.

PUBLIC KEY INFRASTRUCTURE IMPLEMENTATION PLAN

The Marine Corps has been a leader in DoD's implementation and management of Public Key Infrastructure (PKI) and the issuing of Common Access Cards (CAC). Since the activation of DoD PKI in May 1999, the Marine Corps has aggressively installed PKI to DoD standard across the Marine Corps Enterprise Network (MCEN).

In November of 1999, DoD mandated that the CAC would become the token utilized for both physical access to buildings as well as logical access to networks. Since 2001, the Marine Corps successfully installed a CAC infrastructure and issued nearly two million cards. Nearly 80% of all Marines currently hold a CAC.

Last year several other milestones were achieved. The Marine Corps Network Operations Center implemented the initial repository for public key encryption certificates. Device and software certificate issuance exceeded 600 and 30,000 respectively. The Marine Corps completed procurement of over 80,000 CAC readers and middleware for use during the transition from software certificates to CAC use at individual workstations. Finally, the Marine Corps proved its ability to issue PKI certificates in operational environments such a Afghanistan and Iraq.

The Marine Corps now must implement two necessary infrastructure upgrades: a series of directories and Online Certificate Status Protocol (OCSP) responders. These components will allow the Marine Corps to meet DoD requirements for implementing cryptographic logon with the CAC, as well as providing the user a method of validating digitally signed emails and documents.

The Marine Corps remains firmly committed to the implementation of PKI and the enabling of applications to take advantage of the security services that PKI provide. We continue to support DoD PKI requirements for specific programs and mission needs as they arise and are engaged in the development of procedures and policies for the implementation of PKI on the SIPRNET.

MARINE CORPS BUSINESS ENTERPRISE INITIATIVES

The President's Management Agenda, Secretary of Defense's transformational guidance and the Secretary of Navy's Sea Enterprise vision reinforce a series of Congressional measures that challenge the military services to transform business practices as well as military capability.

Business transformation means changing culture, business practices, processes and organizations for sustained advantage. Our purpose in business transformation is to become the most effective and efficient Marine Corps possible, optimizing resources at every level of command in order to free resources for investment in core combat capabilities.

The Marine Corps is already organizing and fully committed to become both more effective and efficient. We assigned executive leadership to directly oversee the Marine Corps Business Enterprise office. This new office will maintain our focus on improving core operational functions by refining all business processes and competing or divesting non-core functions to achieve required capabilities more efficiently. The foundation of our business transformation is a common business information system that will institute cost, output and performance metrics necessary to support internal examination of non-core functions, continuous process improvements, and improved scrutiny of current year fiscal operations.

Much of our business transformation emphasis to date has been on improving installation and logistic support processes. In the future we will expand the scope of this effort to include the entire enterprise. We will continue to reengineer, right-source and divest or eliminate non-core functions. Business information across the Marine Corps will improve. Analysis will link this information to resource allocation decisions and increased scrutiny of current fiscal operations.

We will continue to validate the requirement for military billets in supporting functions. Where we identify opportunities to replace military personnel in support functions with contract or civil service, we will use the improved flexibility of the National Security Personnel System and a streamlined competitive sourcing process to facilitate the conversions at the least cost to the American taxpayer.

Future transformation will build on and be inspired by past accomplishments. In 1999, we initiated, and we continue to develop, one of the largest activity based cost management programs in government. Applying improved cost and performance information along with the judicious use of tools such as business process/organizational streamlining, regionalization, competitive sourcing, and military to civilian/contract conversion, the Marine Corps has achieved concrete results that facilitated the realignment of a regiment of Marines and nearly $100M annually to higher priority needs.

INSTALLATIONS 2020 STRATEGY

Marine Corps infrastructure consists of 15 major bases and stations in the United States and Japan. As noted earlier, the Marine Corps has a long-range vision, *Installations 2020* (*I2020*) that provides a roadmap for the future of these bases. Among the subjects that *I2020* deals with are Public-Private Venture, encroachment control, sustainable infrastructure, natural resource protection, and environmental stewardship.

PUBLIC-PRIVATE VENTURE

Public-Private Venture (PPV) is a tool that allows the Marine Corps to more quickly provide quality homes for our families. Aiming to privatize 95% of its worldwide family housing inventory, the Marine Corps will have contracts in place to eliminate all inadequate family housing by 2007, in accordance with Defense Planning Guidance. (Construction will be phased over four to five years to maximize the number of homes available to our families). Once privatized, the day-to-day management responsibility for this family housing will reside with our private partners. As a member of Limited Liability Company boards, the Department of the Navy continues to participate in key business decisions, including those involving major investments and – in the case of default by the managing partner – changes in the managing partner.

By the end of FY 2003, the Marine Corps had awarded PPV projects at Camp Pendleton (two projects for 4,104 homes), MCRD San Diego (5 homes), Quantico (1,137 homes), and Beaufort and Parris Island (1,718 homes). Through these projects, the Marine Corps will obtain $800 million in housing investments, even

though the Service itself contributed only slightly more than $100 million of its own resources. In addition to this reduction in up-front investment costs, the PPV projects will fix housing faster and produce better quality homes, community support facilities, and maintenance services than had been provided through traditional military construction, operations, and maintenance. These projects are self-sustaining and provide for the long-term renovation and recapitalization of our privatized housing assets, thus ensuring quality housing for the 50-year term of the projects.

ENCROACHMENT CONTROL

Monitoring, evaluating, and responding to encroachment is critical to ensuring bases and ranges are available to support mission readiness now and into the future. Encroachment is defined as any external force that causes the loss of military readiness, including the loss of use of land, air, sea, and frequency spectrum.

The Sustainable Ranges initiative is a process that integrates all aspects of installation and range/training area management, and provides for our installations' long-term viability and ability to support realistic training. The Marine Corps is proactively involved with federal, state, and local government agencies, as well as non-governmental organizations, to provide "win-win" solutions to encroachment pressures to ensure compatible land use which will not degrade mission readiness.

The tools used to ensure compatible land use include:

>> Range/Air Installation Compatible Use Zone studies to prevent and mitigate public exposure to hazards associated with aircraft operations and air-to-ground weapons delivery

>> Joint Land Use Studies to assist local communities in considering the impact of military training areas on local development

>> Land Conservation (Encroachment) Partnering to use Marine Corps operation and maintenance funds to partner with non-governmental organizations to acquire "non-training" buffer lands

>> Community Plans and Liaison Offices at each installation to manage various community involvement and outreach issues, including the growing pressures associated with encroachment

SUSTAINABLE INFRASTRUCTURE

Buildings, utilities, runways and other fixed infrastructure are the backbone of the 5th Element of the MAGTF, and a national asset worth nearly $40 billion dollars. Protecting these assets, and sustaining their value for training and housing Marines, requires a continual commitment in the form of facility maintenance and repair.

The Marine Corps is committed to programming funds to adequately maintain and improve these facilities so they will support the missions of the operating forces. To do this, the Marine Corps developed the Facilities Sustainment Model in conjunction with the Office of the Secretary of Defense. This model uses private industry standards to estimate maintenance and repair investments needed for our physical infrastructure to reach its full life cycle. In addition, the Marine Corps has developed the Commanding Officer's Readiness Reporting System to measure the mission readiness of facilities

that support the operating forces. With this system, the Corps can target facilities for major renovation that are most impacting mission accomplishment.

NATURAL RESOURCES PROTECTION

Marines train as they fight, and that training requires frequent, repeated access to land. Training can be destructive to land and its resources. Unless properly managed, Marine Corps lands can become damaged to the point where realistic training will be degraded.

To ensure that frequent, repeated use of land for readiness purposes can be sustained, each installation prepares and implements an Integrated Natural Resources Management Plan (INRMP). This plan provides a framework for ensuring the continued access to land by appropriately managing land entrusted to us by the American people.

ENVIRONMENTAL STEWARDSHIP

Our nation has crafted a strong environmental code of conduct structured on a wide range of federal, state, and local laws and regulations, strengthened through increased regulatory agency scrutiny and enforcement. Due to the nature of the Marine Corps mission, environmental regulations present significant challenges, but these policies recognize that national defense and environmental protection can co-exist.

As the environmental stewards of our installations, the Marine Corps has engaged with regulators to make significant strides in this area. Today, Marines at all levels contribute toward this goal by simply performing their jobs with an increased awareness of potential environmental impacts. In addition to the Integrated Natural Resource Management Plans discussed above, other efforts include Joint Land Use Studies (JLUS) and aggressive pollution prevention programs.

Our hard work does not end with these initiatives. Much like encroachment, the impacts of environmental regulation and compliance on the Corps' ability to fully utilize its installations are varied and require constant vigilance and attention to ensure that operational readiness is not diminished.

THE MARINE CORPS ROLE IN THE BASE REALIGNMENT AND CLOSURE 2005 PROCESS

The Base Realignment and Closure (BRAC) process provides a singular opportunity to reshape our infrastructure to optimize military readiness. The BRAC 2005 process will help find innovative ways to consolidate, realign, or find alternative uses for current facilities to ensure that the US continues to field the best-prepared and best-equipped military in the world. BRAC will also enable the US military to better match facilities to forces, meet the threats and challenges of a new century, and make the wisest use of limited defense dollars.

The Marine Corps is a full participant in BRAC 2005. As currently configured, Marine Corps infrastructure supports MAGTF operations. However, we look forward to further improvements through potential co-location of other Services (as the host or as a tenant) that could result from the BRAC 2005 findings. Our BRAC 05 analysis will focus on the future of Marine Corps force structure, the accommodation of new weapon system footprints, support necessary to evolving training requirements, and pursuing base structure efficiencies in the provision of common business functions.

MANPOWER RECRUITING SUCCESS

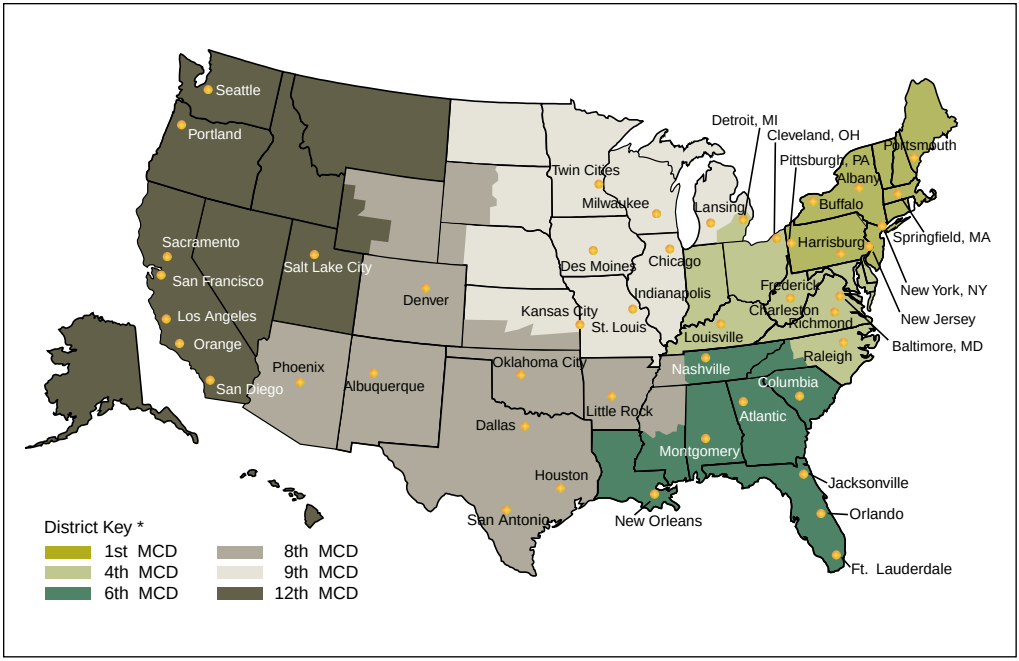
Sustaining an unprecedented record of success in filling our ranks with the highest quality of young men and women available is the hallmark of the Marine Corps Recruiting Command (MCRC). MCRC has consistently accomplished its recruiting mission for the past eight years for enlisted recruiting and 13 years for officer recruiting. These achievements provide us with the impetus to continue improving the recruiting process and enhance the quality of life for our recruiters.

The key to our success remains the individual Marine recruiter, whose tireless efforts and dedication to the task have provided the Marine Corps with its next generation of warriors. Our Corps' recruiters are ambassadors to the American public, and they represent all the virtues of the Marine Corps in a single individual. They symbolize what our young applicants aspire to become.

Recruiting duty is unique and highly selective. Those chosen to become recruiters undergo extensive screening and are considered representative of the best of what the Marine Corps has to offer.

To continue to attract America's finest youth, MCRC has developed revolutionary marketing initiatives for use on the recruiting battlefield. These initiatives strategically place the Marine Corps' brand image in the most visible and most cost-efficient marketing venues available. Successfully conveying the Marine Corps' "Tough, Smart, Elite Warrior" brand image and its embodying benefits remains the key to increased awareness and positioning the Marine Corps with our target market and their principal influencers.

Advances in information and communications technology have enabled swift



dissemination of information that can quickly influence this audience. This ability has brought about a fundamental change in the way we market our Corps. MCRC uses an offensive strategy to penetrate the marketplace with unique advertising that conserves resources and, at the same time, successfully communicates our message. This approach to marketing is a strategic operation that will invariably shape the battlefield for current and future operations.

In FY 2003, the Marine Corps realized unprecedented recruiting success, achieving 103.5% of enlisted contracting and 100.1% of enlisted shipping objectives. Over 97.8% of those shipped to recruit training were Tier 1 high school graduates, well above DoD and Marine Corps standards of 90% and 95%, respectively. In addition, 70.5% were in the I-IIIA upper mental group; again well above the DoD and Marine Corps standards of 60% and 63% respectively. For officers, 100% of objectives in all categories were achieved.

The culmination of the FY 2003 recruiting efforts enabled the Marine Corps Recruiting Command to continue a successful recruiting legacy that has spanned the better part of the last decade. In FY 2004, as force changes are developed to pursue the war on terrorism, MCRC foresees continued recruiting challenges. Arming our recruiters with the resources they need to forge the battle ahead is more important than ever.

ENLISTED RETENTION

The dynamics of our manpower system must match skills and grades to our commanders' needs throughout the operating forces. The Marine Corps endeavors to attain and maintain stable, predictable retention patterns. However, civilian opportunities abound for our Marines as private employers actively solicit our young Marine leaders for lucrative private sector employment. Intangibles, such as the desire to serve our nation and the satisfaction received from leadership responsibilities provided in our Corps, are a large part of the reason we retain the dedicated men and women who choose to continue to be active duty Marines after their initial commitment. Retention success is also partly a consequence of the investment we make in supporting our operational forces – giving our Marines what they need to do their jobs in the field, as well as the funds required to educate and train these phenomenal men and women.

We are ever mindful of enlisted retention issues. Our enlisted force is the backbone of our Corps and we make every effort to retain our best people. Although we are experiencing minor turbulence in a few specialties, the aggregate enlisted retention situation is extremely healthy. Some shortages exist in high-tech Military Occupational Specialties that represent an important part of our warfighting capability, primarily because these young Marines remain in high demand in the civil sector.

We are a young force, making accessions a chief concern for manpower readiness. Of the 154,600 active duty enlisted force, over 26,000 are still teenagers – and 104,000 are on their first enlistment. In FY 2003, we reenlisted 25 percent of our first term eligible population. These 6,120 first term Marines represent 100% of the Marines we need to transition into the career force, and marks the tenth consecutive year that the Corps will have achieved this objective. With the support of Selective Reenlistment Bonuses, we were able to achieve our first term retention requirement with an "MOS match" rate of 99.6%.

Prior to FY 2002, we were encountering a slight increase in the number of first-term Marines we needed to reenlist each year. This was

caused by a consistent trend of slightly lower retention among career Marines. To counter this rising first term reenlistment requirement, we have focused greater attention on retaining Marines in their sixth through twelfth years of service. The Subsequent Term Alignment Plan (STAP) was introduced in FY 2002 to focus on retaining experience. The first year of STAP proved to be a huge success, with a 96% MOS match. In FY 2003, we achieved a 94 percent MOS match that, although less than the initial year of STAP, we still consider a great success for this young program.

The decreasing trend in continuation rates has been stabilized and will continue to stabilize our First Term Alignment Plan (FTAP) requirement to achievable levels. Due to the strong draw from the civilian sector, we elevated the importance of our career force by paying greater attention to retaining them as well as expending 40 percent of our SRB resources to keep this experience level on par with previous years.

This year we continue to see smaller first-term non-Expiration of Active Service (EAS) attrition, similar to the lower attrition experienced in fiscal years 2001 and 2002. The Crucible and the Unit Cohesion programs are contributing to improved retention among our young Marines who assimilate the cultural values of the Corps earlier in their career.

The impact of lower non-EAS attrition allowed us to reduce our accession mission in both FY 2002 and FY 2003, and we may be able to continue this trend in FY 2004. The "downside" to this situation is that our success has increased the cost of our Manpower account by increasing the average length of service of individual Marines. However, these positive results have reduced the burden placed on our recruiters, while concurrently providing our force with more experienced Marines.

In the larger context, we are extremely pleased with our retention situation. We anticipate meeting our aggregate personnel objectives in FY 2005, and we continue to successfully maintain the appropriate balance of first-term and career Marines. The management of youth and experience in our enlisted ranks is critical to our success and we are extremely proud of our accomplishments.

We attack our specialty shortages with the highly successful Selective Reenlistment Bonus (SRB) program. Shortages persist in some highly technical specialties, such as intelligence, data communications experts, and air command and control technicians. Currently, the Marine Corps has allotted $51.8M in FY 2004 in new SRB payments to assist our reenlistment efforts. These payments have been split 60/40 between the FTAP and STAP, respectively. The SRB program has significantly aided our reenlistment rates and improved retention for some of our critical skill shortages. In FY 2004, we are continuing to pay lump sum bonus payments, thus increasing the net present value of the incentive and positively influencing highly qualified, yet previously undecided, personnel. It is a powerful incentive for the undecided to witness another Marine's reenlistment and award of SRB in the total amount.

MARINE CORPS RESERVE CONTRIBUTIONS TO THE GLOBAL WAR ON TERRORISM

From immediate support on September 11, 2001 to combat operations in Afghanistan in 2002 and Iraq in 2003, the Marine Corps Reserve has demonstrated its ability to rapidly mobilize combat ready Marines to augment and reinforce the active component. Four thousand four hundred sixty-three Reserve Marines were on active duty in March 2002 in support of Operation Noble Eagle and Operation Enduring Freedom. Activations in support of Operation Iraqi Freedom began in January 2003 and peaked at 21,316 Reserve Marines on active duty in May 2003 representing 52% of the Selected Marine Corps Reserve (SMCR). Marine Reserve units and individuals were ready and rapidly integrated into gaining force commands, demonstrating a key core competency emphasized in *Marine Corps Strategy 21*.

A strong Inspector-Instructor (I&I) system and a demanding Mobilization and Operational Readiness Deployment Test (MORDT) program ensured Marine Corps Reserve units achieved a high level of pre-mobilization readiness. Marine Reserve Units continuously train to a C1/C2 readiness standard, eliminating the need for post-mobilization certification. Ninety-eight percent of SMCR Marines reported for mobilization and only .4% requested a deferment, delay, or exemption.

The Marine Corps Reserve executed a rapid and efficient mobilization with units averaging six days from notification to being deployment-ready and 32 days from deployment order to arrival in theater. Many Marine Reserve units activated were ready to deploy faster than strategic lift could be provided.

Marine Reserve mission accomplishments during Operations Noble Eagle and Enduring Freedom included:

>> Company B, 1st Battalion, 23d Marine Regiment provided security in Guantanamo Bay, Cuba

>> 2d Battalion, 25th Marine Regiment and 2d Battalion, 23d Marine Regiment both served as Quick Reaction Forces in support of Homeland Security

>> Both reserve KC-130 squadrons, VMGR-234 and VMGR-452, were activated and conducted assault support missions during Operation Enduring Freedom

>> Both reserve CH-53E squadrons, HMH-769 and HMH-772, were activated and supported Enduring Freedom missions

Marine Reserve mission accomplishments during Operation Iraqi Freedom included:

>> 2d Battalion, 23d Marine Regiment was the lead element for Regimental Combat Team (RCT) 1, 1st Marine Division for several days and was involved in the operation to secure the UN Compound in Baghdad

>> 4th and 8th Tank Battalions, 4th Light Armored Reconnaissance (LAR) Battalion and 4th Amphibious Assault Vehicle (AAV) Battalion fought from crossing the Kuwait/Iraq border to the securing of Tikrit

>> B Company, 4th Light Armored Reconnaissance (LAR) Battalion made the first two kills of Iraqi armored vehicles

>> 6th Engineer Support Battalion (ESB) constructed the largest tactical fuel farm in Marine Corps history, operated the V Corps Tactical Petroleum Terminal and constructed a 90-mile long hose-reel fuel system from Kuwait to Iraq in the heart of enemy territory

>> Bridge Company A, 6th Engineer Support Battalion, built a 155-meter long improved ribbon bridge spanning the Tigris River, the longest such bridge in Marine Corps history

>> Both Marine Reserve KC-130 squadrons, VMGR-234 and VMGR-452, had their mobilization orders extended and conducted assault support missions during Operation Iraqi Freedom

>> Marine Reserve CH-53E from HMH-772 flew over 500 hours in support of the operation

>> During Phase IV of Iraqi Freedom, 3d Battalion, 23d Marine Regiment and 2d Battalion, 25th Marine Regiment conducted independent operations in Al Kut and An Nasiriyah provinces

>> During Phase IV, 1st Battalion, 24th Marine Regiment conducted convoy security

>> 60% of the personnel in the I MEF Combat Operations Center were Marine Corps Reservists

The Marine Corps is considering several transformations to enhance the Marine Corps Reserve's capabilities as a ready and able partner of the Total Force Marine Corps:

>> Establishing two additional Reserve Military Police (MP) platoons at a new reserve site in North Dakota, resulting in an increase of 58 Reserve MPs. We may increase MP manning by 20 Reservists at the MP Company located in Minneapolis, MN. Both initiatives are pending finalization of Reserve force structure

>> Establishing a Reserve Intelligence Support Battalion (ISB) that will enhance command and control of Reserve Component (RC) intelligence assets while simultaneously establishing additional RC intelligence structure and capabilities. This initiative places Reserve Marine intelligence detachments at Joint Reserve Intelligence Centers (JRICs) throughout the continental United States, providing enhanced "reach back" through JRIC connectivity. Additionally, the ISB will enhance the capability to provide task-organized, all-source intelligence detachments to augment forward-deployed MAGTFs. Establishment of the ISB is pending finalization of Reserve force structure

>> Evaluating options to create active component Civil Affairs structure to provide planning capabilities for operational and Service headquarters. The goal is to increase active component integration into Marine Reserve Civil Affairs Groups (CAG)

>> Initiating two programs to manage ongoing and growing Joint and internal Individual Augment (IA) requirements. The first program is to identify and prioritize IA requirements and the other is to review and realign Individual Mobilization Augmentee (IMA) structure and manning to meet those requirements

Even as these initiatives are being implemented, the Marine Corps Reserve is again preparing to mobilize combat ready Marines to augment and reinforce the active component in support of Operation Iraqi Freedom II.

MAGTFs provide combatant commanders with forces that are tailored to meet specific mission requirements. When called, the Marine Corps Reserve is ready to augment and reinforce MAGTFs. Our Reserve Marines are a vital and critical element of our Total Force. The training, leadership, and quality of life of our Reserve Component is a significant Marine Corps priority.

CIVILIAN MARINES

Recognizing people are our most important asset, General James L. Jones, the 32d Commandant of the Marine Corps, charged senior Marine Corps officials with developing and implementing a strategic plan for the recruitment, development, and retention of our Civilian Marines. Development of the plan was accomplished in 2002 with the publication of the United States Marine Corps Civilian Workforce 2002-2007 Campaign Plan (CWCP). This plan consists of six strategic goals:

>> Nurture, build, and grow Civilian Marines

>> Provide flexible career opportunities

>> Create leaders at all levels

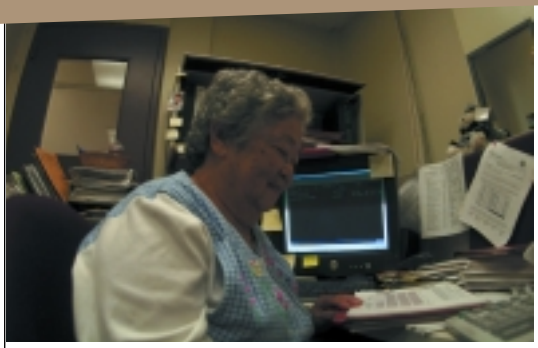
>> Improve the performance evaluation system

>> Strengthen workforce management expertise

>> Establish an integrated Total Force management approach.

The current Commandant, General Michael W. Hagee, issued *White Letter No. 01-03* of 7 January 2003 conveying his commitment to the CWCP and providing implementing guidance.

Our vision is to make the Marine Corps the employer of choice for a select group of civilians imbued with the Marine Corps values of honor, courage, and commitment. They will serve as expert, innovative, and distinctive team members, dedicated to supporting our nation's finest fighting force. The value proposition, "Support our Marines. Be part of the Team" answers the question, "Why would a talented person want to be employed here?" Through implementation of the



CWCP, we will not only define what the Marine Corps will offer its Civilian Marines, but what the Corps expects from them. We will attract, nurture, build, and grow Civilian Marines by providing innovative recruitment, development, retention, reward, and acculturation programs throughout their work-life cycle.

An integral aspect of the CWCP is the career and leadership development of our Civilian Marines. The Civilian Career Advocacy Board (CCAB), comprised of the Marine Corps' senior executives, was tasked by the Commandant to act as the executive management group for civilian career and leadership development matters. Each CCAB member serves as the leader for civilian workforce communities of interest. These communities provide a professional identity for core occupations, common career paths, and access to mentors. They will evolve to address the changing needs of the workforce with respect to the mission of the Marine Corps.

Projected increases in the number of federal employees eligible for retirement and competition with private industry may have an adverse impact on the federal government's ability to attract and retain necessary personnel. The Marine Corps' strategic plan will minimize this impact and ensure the Corps is equipped with an expert civilian workforce capable of supporting our military forces and accomplishing future mission requirements.

QUALITY OF LIFE

Wherever Marines are operating – in garrison, on deployment, or on independent duties – we provide them with Quality of Life (QOL) programs and services. Depending on the intensity and duration of the mission, QOL can be specifically tailored to meet mission requirements. Additionally, as Congress has recognized in the FY 2004 National Defense Authorization Act, without the continued support of military families, the nation's ability to sustain a high quality all-volunteer military force would be undermined.

During the height of Operation Enduring Freedom and Operation Iraqi Freedom, 67% of Marines were away from their home base or station. The Marine Corps provided QOL support that Marines needed at deployed locations, and cared for the Marines and families left at home. Expanded toll-free family assistance hotlines, centralized sources for information, and wide use of the Internet are necessary.

One example of an innovative approach to QOL support is *MCCS One Source*, a pilot program of the Office of the Secretary of Defense, for online and toll-free employee assistance for Marines and their family members. The program launched in August 2002, and was available Corps-wide in January 2003. By the end of July 2003, trained professionals had addressed more than 22,000 calls and e-mails on topics such as parenting and childcare, education services, financial information, and information/advice on legal issues, elder care, health and wellness, crisis support, and relocation services. *MCCS One Source* is available 365 days per year via toll-free numbers, email or the Internet. By offering 24/7 round-the-clock information and referral services, we greatly expanded support of all Marines and their families, particularly reserve families who are often located away from bases and installations.

While the Marine Corps continues to focus on finding innovative ways to provide support to deployed Marines on the front lines and families at home, senior Marine Corps leadership also recognizes that extended deployments and time in combat have consequences on both the Marine and the family. Knowing the Marine Corps' specific demographics and influences in the context of mission and tempo allows our leadership to monitor risk areas and work to prevent incidents in the areas of substance abuse and domestic violence, among others, decreasing the need for intervention.

As an expeditionary force, the Marine Corps conducts frequent and sometimes lengthy deployments, and our senior leadership is focused on understanding and mitigating the effects of these separations and warrior experiences on recruitment, readiness, retention, and family life. For example, in recognition of the importance of the transition home for both Marines and their families, the Marine Corps developed a standardized return and reunion program in coordination with Marine Corps Community Services (MCCS) personnel, health professionals, and chaplains. The

program was implemented in March 2003, and was specifically designed to ease the assimilation of service members back into family life following long periods of separation, as well as provide information on the additional support programs offered in support of deploying service members and their families. The program consists of a mandatory warrior transition brief for the returning Marine, a return and reunion guidebook for Marines and family members, a caregiver brief, and briefs designed for spouses.

The Marine Corps will continue to look at our unique demographics (e.g., the youth of the force, number of children/spouses, number of single parents, number of relocations/forward deployed Marines) in a holistic manner and adjust

QOL programs to provide the counseling and support needed before, during, and after deployments. The primary focus must be on prevention so that intervention requirements are decreased.

The Marine Corps continues to monitor the attitudes and concerns of Marines and family members relative to their QOL as we provide support during the global war on terrorism. We remain committed to improving the standard of living in the Corps and ensuring that the "QOL benefit" is clearly articulated to our Marines and families.